THE IRON TRADE REVIEW

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THE WEEK IN IRON CIRCLES.

THE MARKET AT LARGE.

The iron market holds a steady course, the week bringing few changes. Attention has been centered on the unprecedented scale of consumption, which is now at a yearly rate above 16,000,000 tons, with production close to 15,600,000 tons a year. The Western Pig Iron Association figures show a reduction in stocks of 51,935 tons, with 276,000 tons or less than a weeks' supply on hand May 1. The principal pig iron buying of the week has been by the United States Steel Corporation which has taken 50,000 tons of basic for delivery in the second half, on a trade for coke, and negotiations for 25,000 tons more are likely to be closed this week The Steel Corporation is not yet a buyer of Bessemer iron for the second half and the merchant furnacemen of the Valley are still in doubt as to their needs both of coke and ore in the latter part of the year. Here and there reports of concessions on Southern iron crop out, but the leading producers in that section insist that the only weak iron marketed recently is in the lower grades. In the Chicago market some of the smaller Southern producers have quoted somewhat lower prices on all foundry grades. The melt of foundry iron in all sections is heavy and the only drawback in that line is the possibility of strikes in machine shop centers. Present indications are that many machine shops will be idle on Monday, May 20. There is no likelihood of uniform action either by employers or machinists, but that the double demand for a shorter day and an advance in wages will be refused by many shops seems certain. The enormous consumption in finished lines is keeping mills fully occupied, though there is undeniably not the rush of specifications that was apparent a few weeks ago. This is most apparent in plates, in which new business also is lighter. In sheets the congestion of the mills is not relieved and there is likely to be some delay in building operations through the difficulty of getting galvanized sheets. That present prices are by no means being realized on material going from the mills was made apparent in the wage settlements for March and April, the average price on material shipped in these months being very disappointing to the workmen. That the railroads are responsible in large part for the present prosperity in the iron trade is shown again in a record of 11,915 cars and 286 locomotives ordered in April, as against 3,680 cars and 161 locomotives in April, 1900. In all railroad equipment a like record is being made and rail business is still crowding upon the mills. The absorption of a wire and nail plant in the St. Louis district by the American Steel & Wire Co. is a development of the week. Demand in wire products is still very heavy. A sensation has been made of a London cable saying that an American syndicate is buying up the stocks of Cleveland iron. The foundation for the report is the purchase of a few thousand tons of Cleveland iron by a firm of pig iron merchants in this country, who were tempted by the decline of Cleveland pig $2 below Scotch iron, though ordinarily they are on a parity. The iron thus bought is to be resold in England. It would seem that bearish sentiment in the British iron trade had overrun the mark and that a reaction is due.

PITTSBURG.

OFFICE OF *The Iron Trade Review*,
439 PARK BUILDING, May 15.

Outside of heavy purchases of basic iron by the United States Steel Corporation, the past week has been comparatively quiet in both raw and finished lines. One block of basic iron was negotiated for on a coke deal, deliveries to be made during the second half of the year. The contract calls for about 50,000 tons of iron and the price is based upon $15 at the furnace. Inquiries are also out for an additional large tonnage of basic for second half delivery and it is probable that the deal will be closed before the end of the week. What the requirements of the steel corporation in Bessemer iron will be cannot yet be ascertained and it is not probable that any attempt will be made to close for second half delivery before June 1. Owing to previous heavy buying, the sales of Bessemer continue limited in number and in amount. The sales of the past week will hardly reach 4,000 tons at $16 at the furnace. It is probable that a better price will be fixed for delivery during the second half, although no action has yet been taken.

In finished lines the market continues strong. Sheets are in big demand and both the independent producers and the combination are in no position to make prompt deliveries. Zug & Co. will increase their output before the end of the month by nearly 50 per cent but this extra tonnage also is reported taken. The demand for merchant pipe by the jobbing trade is extremely pressing and the largest producer, owing to the large amount of business placed during the past two months is in no position to make prompt deliveries. This condition of affairs exists despite the fact that every available mill is in operation. The independent producers are also sharing in the general prosperity, and while they are demanding somewhat higher prices than the combine, they are receiving them for prompt shipment. In steel bars the tonnage fell off considerably during the week and it is evident that some of the agricultural implement manufacturers are inclined to hold off with their contracts anticipating somewhat lower prices within the next six weeks, but there is at present no evidence of a weakness in the market.

The demand for structural continues heavy and the immense amount of building that is being carried on all over the country is resulting in the placing of a larger tonnage than ever before of structural shapes. While all finished products are in strong demand, with mills practically unable to make prompt shipments, there is no inclination on the part of the manufacturers to advance prices. Every nerve is being strained to keep prices at their present level, although, were the consumers given free rein they would no doubt force prices up on themselves in a very short time, so great is the demand for finished products for spot shipment.

President Schwab and other officials of the United States Steel Corporation this week are on a tour of inspection of the plants of the combination in the Pittsburg district and in the Mahoning and Shenango Valleys. Wherever feasible, it is reported that plants will be combined, which will greatly lessen operating expenses and will result in the reduction of the number of smaller plants in the combine.

PIG IRON.—The United States Steel Corporation continues to buy basic iron for second half delivery and it is probable that the entire requirements for several months of the second half will be covered before the end of the week. Little of

the iron can be secured in the South and efforts are being made to secure it from furnaces in the Valley. The buying of Bessemer iron continues in small lots only and it is estimated that less than 4,000 tons were sold during the week at $16 at the furnace for delivery during the remainder of the first half. In foundry iron there is continued buying in small lots only and No. 2 commands from $15.25 to $15.50 per ton, delivered, Pittsburg. The sales of the week amount to about 3,000 tons. Some Southern iron is finding its way into the market but commands $15.65 delivered. We also note sales of about 800 tons of forge iron at $14.75, delivered Pittsburg. We revise quotations as follows:

Bessemer, Valley	$16 00
Bessemer, Pittsburg	16 75
No. 1 Foundry	$15 75 to 16 00
No. 2 Foundry	15 25 to 15 50
No. 3 Foundry	14 75 to 15 00
Gray Forge, Pittsburg	14 75

STEEL.—With the organization of the United States Steel Corporation the individual large buyers of steel billets are further eliminated from the open market and outside of the small independent consumers there will be no buyers of billets in the future. The combinations will no doubt sell steel to one another but all sales will be of a private nature and will never reach the public. Small lots of steel that are being offered from time to time are being purchased by the independent consumers and we note sales of 2,000 tons of Bessemer billets at $24 per ton at the mill. We also note the sale of a small lot of open-hearth billets at $25.50 per ton at the mill.

FERRO-MANGANESE.—No change has been made in the price of manganese during the week and we continue to quote domestic 80 per cent at $58.50 per ton, delivered in carload lots, at buyer's mill.

SPELTER.—There has been little variation in the price of spelter during the past few days, although sales have been reported large. We quote prime Western grades at 3.95c to 4c, Pittsburg.

MUCK BAR.—We note the sale of a 300-ton lot of muck iron at $27.25, delivered Pittsburg.

SKELP.—Independent manufacturers of merchant pipe are experiencing considerable difficulty in securing skelp. Nearly the entire available output of this district has been contracted for and every small lot that is offered in this market, whether rolled locally or in the east is snapped up immediately. The market is firm as a result. We quote steel skelp at 1.80c, and iron, both grooved and sheared at 1.85c to 1.90c.

RAILS AND TRACK MATERIAL.—Street railroad companies who failed to place their orders for rails earlier in the year are finding it an extremely difficult matter to place their orders to secure shipments within the next few months. Brokers who purchased rails on speculation are already reaping profits by selling their products at a good premium and all kinds are being offered for rails for immediate delivery. None of the large producers are able to deliver on new business before September and October. Light rails are also in big demand and prices are proportionately high. We make the following quotations: Rails, standard sections, 50 pounds and over, in lots of 200 tons and over, $28; car lots and less than 200 tons, $30; less than car lots, $32; light rails, 12 pounds, $37; 16 pounds, $35; 20 pounds, $34; 25 to 40 pounds, $40. Track material: Spikes, 1.95c to 2c; track bolts, square heads, 2.60c; hexagon heads, 2.70c; fish plates, 1.60c to 1.70c.

PLATES.—A large tonnage of plates was contracted for during the week by boiler and tank manufacturers. Prices continue firm but unchanged and all the mills in this district are operating in full. Our quotations unchanged are as follows: Tank plate, ¼-inch thick up to 100 inches in width, 1.60c at mill, Pittsburg; flange and boiler steel, 1.70c; marine, ordinary firebox, A. M. B. A. specifications, 1.80c; still bottom steel, 1.80c; locomotive firebox, not less than 2.10c; and it ranges in price to 3c. Plates more than 100 inches wide, 5 cents extra 100 pounds. Plates 3-16 of an inch in thickness, $1 extra; gauges Nos. 8 and 9, $2 extra. These quotations are based on carload lots, with 5 cents extra a hundred pounds for less than carload lots. Terms, net cash in 30 days.

BARS.—Little new business was placed by the agricultural implement manufacturers during the past week. Those who have not yet placed their business are inclined to hold off, although there is no indication of a sag in prices at the present time or in the near future. On large business 1.40c continues to be quoted, but on smaller lots 1.45c to 1.50c is asked. Common iron bars are held at 1.50c to 1.55c and refined bars are held at 1.75c to 1.85c.

SHEETS.—There is no let up in the demand for black sheets and galvanized also is receiving its share of attention. We note the sale of 700 tons of galvanized sheets for foreign shipment, deliveries to be made within the next four months. Prices continue firm and unchanged. We make the following quotations in carload lots: Black sheets, one pass through cold rolls, No. 30, 3.65c; No. 29, 3.55c; No. 28, 3.35c; No. 27, 3.25c; Nos. 25-26, 3.15c; Nos. 22-4, 3.05c; Nos. 19-21, 2.95c; Nos. 17-18, 2.80c; Nos. 15-16, 2.70c; Nos. 13-14, 2.60c; Nos. 10-12, 2.50c. For more than carload lots a reduction of 5 cents per 100 pounds is made; for less than carload lots an advance of 15 cents per 100 pounds over the above price is asked. Galvanized sheets are strong at 70 and off.

PIPES AND TUBES.—The demand for merchant pipe for spot delivery is tremendous on the part of the jobbing trade. It is practically impossible to make shipments as the jobbers desire and as both the independent mills and the combine are filled up on business there remains nothing for the jobber to do but wait. Foreign business continues good. Discounts to consumers in carload lots, Pittsburg, are as follows:

MERCHANT PIPE.

	Carload lots. Black Per cent.	Carload lots. Galv. Per cent.	Less than carload lots. Black Per cent.	Less than carload lots. Galv. Per cent.
⅛ to ⅜ and 11 to 12 in	59.2	46.2	54.9	40.9
¼ to 10 inches	66.7	53.3	61.9	49.9

BOILER TUBES.

	22 Feet and under. Per cent. Iron.	Steel.
1 to 1¾ and 2¾ to 5 inches, inclusive	43½	63½
2 to 2½ inches, inclusive	43	60
6 inches and larger	53	59

CASING.

	S. and S. Per cent.
2 to 3 inches	58
3¼ to 4 inches	63
4¼ to 12¾ inches	65

O. D. PIPE.

	Per cent.
14 to 22 inches	42
24 inches, o. d. and larger	37

THREADS AND COUPLINGS.

	Per cent.
14 to 16 inches o. d.	35

STRUCTURAL MATERIAL.—The McClintic-Marshall Construction Co. during the past week closed contracts for fully 3,000 tons of structural material. In addition local mills are in receipt of orders from all sections of the country for building material for immediate shipment. Prices continue firm but unchanged as follows: Beams and channels, 3 to 15 inches, 1.60c; 18 to 24 inches, 1.70c; tees, 1.65c; zees, 1.60c; angles from 3 to 6 inches, 1.60c; universal mill plates, 1.60c.

WIRE AND WIRE NAILS.—The cut nail manufacturers have reaffirmed prices on their product for the month of May. They report a big demand. The Sharon Steel Co. is already soliciting business for its wire nail plant which will be placed in operation shortly. Prices are unchanged as follows: Single carloads of wire nails to jobbers, $2.30, Pittsburg; to retailers, $2.40; plain wire, carload lots, is now quoted at $2.25 to jobbers and $2.35 to retailers; painted barb wire, $2.60 in carload lots to jobbers, and $2.70 to retailers; galvanized barb wire, $2 in carload lots to jobbers, and $3 to retailers. Cut nails are quoted at $2, Pittsburg, in carload lots, 2 per cent off in 10 days.

MERCHANT STEEL.—Considerable new business in shafting was placed during the week but in other lines the market was comparatively quiet. Quotations are unchanged as follows: Turned, cold rolled and ground shafting at 55 per cent off for car lots and 50 per cent off for less than car lots; tire steel in carload lots and over, 1.70c; less than carload lots, 1.75c. Toe calk is held at 1.75c in large lots, and in small lots as high as 1.85c. Tool steel is held at 7c and upwards, according to quality; hoops and bands, 1.95c to 2c.

OLD MATERIAL.—The prices of old material are sagging somewhat and dealers who have been accumulating large stocks are beginning to offer their accumulations at somewhat lower prices than they asked a week ago. We revise our quotations, gross tons, as follows: Heavy melting stock.

$17 to $17.25; low phosphorus melting stock, $19 to $20; steel rails, $16.50 to $17; busheling scrap, $14 to $14.50; No. 1 wrought, $17 to $18; iron rails, $21 to $21.50; cast borings, $8.50 to $9; cast scrap, $13.50 to $14.

COKE.—Coke producers are now growing somewhat anxious over the position taken by the furnace operators in refusing to place contracts at the present time for second half delivery and it is reported that concessions have been made by some of the outside coke producers to secure business. From the offerings of the past week it will be possible for the furnacemen to secure outside coke for second half delivery at $1.75 per ton and strictly Connellsville product at $2 per ton. Foundry coke is held at $2 and $2.50 respectively. For the week ending Saturday, May 4, the total production of the Connellsville region amounted to 234,637 tons, a decrease over the production of the previous week of 2,464 tons. The shipments aggregated nearly 11,000 cars.

CHICAGO.

OFFICE OF *The Iron Trade Review*,
534 MONADNOCK BLOCK, May 14.

The plant of the Continental Wire Co. at Granite City, Ill., which for several months past has been operated by the Merchants' Wire & Nail Co., has been acquired by the American Steel & Wire Co. This plant, which has a capacity of about 100 tons daily, will be continued in operation by the new owner, manufacturing plain and barbed wire and wire nails to enable it to catch up on orders. For some weeks past, it has been impossible to give prompt delivery in these lines, but with the Granite City mill in operation, it is hoped that the situation will be somewhat relieved. The Cambria Steel Co. through its Chicago office, received from the New York Central & Hudson River Railroad last week, an order for the structural steel required in the erection of a steel grain elevator at Weehawken, N. J. Between 5,000 and 6,000 tons will be required. The market for bars continues firm, with a plentiful supply of orders. Most of the contracts placed are for small lots, though there are a few large contracts pending, notably one from a car builder for 2,000 tons. In pig iron the market is firmer, prices and deliveries being asked for on several thousand tons.

PIG IRON.—The market this week if anything, is firmer than has been apparent for some weeks past. Contracts representing several thousand tons are pending and a fair tonnage has been closed. Notwithstanding the reports that some Southern furnaces contemplated a cut, there is no disposition in this district to shade prices. We quote prices, unchanged, as follows:

Lake Sup. Charcoal	$18 00 to $19 00	Southern Coke No. 4	$14 40 to $14 65
Local Coke Fdy. No. 1	16 00 to 16 50	Southern No. 1 Soft	15 90 to 16 15
Local Coke Fdy. No. 2	15 50 to 16 00	Southern No. 2 Soft	15 40 to 15 65
Local Coke Fdy. No. 3	15 00 to 15 50	Southern Silveries	15 90 to 16 15
LocalScotchFdy. No. 1	16 00 to 16 50	Jackson Co. Silveries	17 50 to 18 00
LocalScotchFdy No. 2	15 50 to 16 00	OhioStrong Softeners	16 50 to 17 00
LocalScotchFdy. No. 3	15 00 to 15 50	Alabama Car Wheel	21 00 to 22 00
Southern Coke No. 1	15 90 to 16 15	Malleable Bessemer	16 50 to 17 00
Southern Coke No. 2	15 40 to 15 65	Coke Bessemer	17 50 to 18 50
Southern Coke No. 3	14 90 to 15 10		

BARS.—Though there is not the active demand for bar iron and steel of a few weeks ago, there is nevertheless a plentiful supply of small orders coming from every branch of the trade. The activity of railroads in car building has shown itself in another inquiry for about 2,000 tons. A good tonnage was closed last week and the week opens up with a large number of inquiries. Prices remain unchanged at 1.55c to 1.60c for iron and 1.60c to 1.65c for steel.

STRUCTURAL MATERIAL.—The Chicago office of the Cambria Steel Co. received last week from the New York Central & Hudson River Railroad the contract for the structural steel required in the erection of a steel grain elevator at Weehawken, N. J. It is estimated that between 5,000 and 6,000 tons will be required. George M. Moulton & Co., of this city, has the general contract. There is little building calling for steel construction being done in this district, and neither orders nor inquiries are very numerous. Mill shipments are quoted as follows: Beams, 15 inches and under, 1.75c; 18 inches and over, 1.85c; angles, 1.75c to 1.80c; plates, 1.75c; tees, 1.80c; zees, 1.75c; small lots from store, ¼ to ½c higher.

SHEETS.—The same condition prevails as for the past two months. Mills are unable to make prompt shipment and continue to divide their stock pro rata among the buyers. Notwithstanding this, however, many orders continue to be booked. We quote prices as follows: No. 27 black, 3.40c to 3.50c, and galvanized is held at 70 per cent from store and 70 per cent and 5 per cent from mill, Chicago.

BILLETS.—Though none of the mills have billets for sale, we quote $28, Chicago.

RAILS AND TRACK SUPPLIES.—With one or two exceptions, most of the mills have sold their entire capacity in standard rails for the year. For the unsold capacity, many inquiries are being received. It is a question of either taking delivery in the last two months of the year or deferring purchase. In light rails, there is an active demand and several large orders have been booked. The demand for track supplies is also heavy, and it is diffcult to get early shipment. Quotations are as follows: Standard rails, $28; light sections, $28 to $33; splice bars, 1.60c to 1.70c; spikes, 1.90c to $2; track bolts, hexagon nuts, 2.70c to 2.80c; square nuts, 2.55c to 2.65c.

PLATES.—There is no appreciable change in the situation. Inquiries are brisk and mills are rapidly selling their capacity for the year. Prices are unchanged, as follows: Mill shipments, Chicago delivery: Tank steel, 1.75c; flange steel, 1.90c to 2c; marine steel, 1.95c; firebox steel, ordinary, 2c to 2.10c; firebox, special, 2.25c and upwards.

MERCHANT STEEL.—Some large contracts were closed during the past week with the agricultural implement trade. Most of the smaller implement manufacturers, however, have not yet purchased their season's supply. Prices remain unchanged, as follows: Mill shipments, Chicago delivery, smooth finished tire steel, 1.90c to 2c; open-hearth spring steel, 2.50c to 2.75c; toe calk, 2.40c to 2.60c; sleigh shoe, 1.85c to 1.90c; cutter shoe, 2.40c to 2.60c; ordinary tool steel, 6c to 7c; specials, 13c and upwards. Cold rolled shafting, 55 per cent and upwards.

MERCHANT PIPE.—There is no diminution in the demand and mills continue behind in shipments. Manufacturers quote random lengths, Chicago delivery, as follows:

MERCHANT PIPE.

	In carloads.		Less than carloads.	
	Blk.	Galvd.	Blk.	Galvd.
½ to ⅜ inch and 11 to 13 inches	59.2	46.2	54.9	40.5
¼ to 10 inches	66.7	53.3	61.9	49.9

WIRE AND WIRE NAILS.—With the acquisition of the plant of the Continental Wire Co. at Granite City, Ill., by the American Steel & Wire Co. the latter company hopes to catch up on its deliveries in plain and barb wire. At the present time, reasonably prompt shipment can be promised only on wire nails, the company having a large stock on hand. There is no change from conditions reported last week, many inquiries continuing to be received, and a large business having been closed. Prices remain as follows: Carloads of wire nails to jobbers, $2.40, Chicago; to retailers, $2.50; plain wire, carloads to jobbers, $2.35; to retailers, $2.45; painted barb wire to jobbers, carloads, $2.70; to retailers, $2.80; galvanized barb wire, carloads to jobbers, $3; to retailers, $3.10.

OLD MATERIAL.—With the railroads busy laying new track and repairing old track, and the farmers sending in their accumulations of the past winter, there is no end to the supply of old material. This has resulted in some further weakening of the market. Dealers' selling prices per gross ton, are as follows:

Old iron rails	$20 00 to $21 00	Old Wheels	$16 50 to $17 00
Old steel rails, long	15 00 to 16 00	Heavy melting steel	14 00 to 14 50
Old steel rails, mixed	14 00 to 15 00	Mixed country steel	10 00 to 10 50
Relaying rails	20 00 to 22 00		

The following are selling prices per net ton:

No. 1 R. R. wrought	$15 00 to $15 50	Iron axles	$20 00 to $21 00
No. 2 R. R. wrought	13 00 to 13 50	Cast borings	4 00 to 4 50
Dealers' forge	12 50 to 13 00	Wrought turnings	9 00 to 9 50
No. 1 busheling	11 50 to 12 00	Iron axle turnings	10 50 to 11 00
Heavy cast	11 50 to 12 00	Steel axle turnings	9 50 to 10 00
Railway malleable	12 50 to 13 00	Stove plates	8 50 to 9 00
Country malleable	11 50 to 12 00	Old iron splice bars	17 00 to 17 50

CLEVELAND.

OFFICE OF *The Iron Trade Review*,
1064 ROSE BUILDING, May 15.

Ore shipments have fairly begun, several cargoes having been unloaded at Lake Erie docks in the past few days. The Michipicoten range was among the earliest shippers, two cargoes of Helen ore being among the first unloaded. The long deadlock between the United States Steel Corporation and its marine engineers was broken by a compromise this week. The wages asked for are granted and additional help on some of the larger steamers. The non-union men employed

early in the season will be retained. The ore situation continues quiet. The early sales in the East were better proportionately than those to Mahoning and Shenango Valley furnaces, the foundry iron trade having a more certain future in the judgment of those engaged in it than the merchant Bessemer trade. It is reported that some negotiations for the sale of non-Bessemer Mesabi ores by the United States Steel Corporation on term contracts are under way. These are considered significant as pointing to the policy that is to be pursued. It is believed the disposition will rather be to husband the Bessemer resources of the Steel Corporation.

PIG IRON.—Consumers are hurrying forward shipments of foundry iron, and there are buyers in the market with every week, though only for moderate lots for early shipment. Free buying for the second quarter is likely to be delayed for some time. We continue to quote foundry iron at $14.50 Valley furnace, which is the quotation of the majority of sellers, but prices as low as $14 are still heard. Forge is quoted $13.75 to $14 at furnace. Charcoal iron is firm at $18 Lake Erie port, with some makers quoting higher. We quote Cleveland deliveries as follows:

Bessemer	$16 50 to $17 00	Valley Scotch No. 1	$15 25 to $15 75
No. 1 Strong F'dry	15 25 to 15 75	Valley Scotch No. 2	14 75 to 15 00
No. 2 Strong F'dry	14 75 to 15 00	Gray forge, Valley	13 73 to 14 00
No. 3 Foundry	14 25 to 14 50	LakeSuperior charc'l	18 10 to 18 50

FINISHED MATERIAL.—The market is quieter than for some weeks. In plates and structural steel very little is being done locally. Specifications on the former are not plentiful and the mills are making better deliveries than at any time this year. Bars are sold for the most part in small lots. Considerable business done several months ago at lower prices than to-day's is still on the books of manufacturers without specifications, though in some cases the contract period is near its end. The prospect of trouble in the machinists' trade is having some effect on the small trade that is supplied through jobbers. We quote bar iron at 1.45c Valley mill in carload lots and steel bars at 1.40c to 1.50c, Pittsburg. Sheets and wrought pipe are the firmest articles on the list, and in both the mills are still considerably behind their contract deliveries. We quote sheets as follows at mill: No. 12 blue annealed, 2.10c to 2.15c; No. 14, 2.20c to 2.25c; No. 17, 2.40c; No. 18, 2.50c to 2.60c. For one pass through cold rolls, $5 a ton additional. No. 27, one pass through cold rolls, 3.20c to 3.25c; No. 28, 3.30c to 3.35c.

OLD MATERIAL.—Still following pig iron, the market for old material is quiet. Some variations in prices from those noted last week are reported—firmer figures in a few cases, but reductions in more. We quote f. o. b. Cleveland, gross tons: Old iron rails, $19.50 to $20; old steel rails, $15 to $15.50; iron axles, $22; old car wheels, $16 to $17; No. 1 railroad wrought, $16 to $17; wrought turnings, 11 to $11.50; cast borings, $6 to $6.50; No. 1 machinery cast scrap, $14; mill scrap, $14 to $14.50; grate bars, $8.50 to $9; stove plate, $9.50 to $10.

CINCINNATI.

May 13.

Matthew Addy & Co. review the market as follows: "As the month gets along there is a better inquiry. Demand is very decidedly improved over what it was on May 1. The publication of the April statistics doubtless cut a considerable figure in the situation as they put a sudden stop to the croakers who predicted that our production was already too great. The continued reduction in furnace stocks coupled with the difficulty that is experienced in many quarters in getting iron forward as fast as consumers need it are hard and immovable facts that cannot be changed. Of course production is at flood tide, but consumption is also at flood tide and the flood tide of consumption is continuing to swell. It is hard for any one not actually in touch with the situation to realize the great activity among melters of iron. Business during the week has been of fair proportions. There have been no special features to current trade as it has consisted of a great many minor transactions calling for all kinds of iron. Everything on the list has been sold in the week."

Rogers, Brown & Co. refer particularly to the existing statistical position and the enormous consumption to which it points. "Two great facts of the pig iron interests of the United States are today rendered conspicuous. First we have increased production until the 15,000,000 ton per annum mark has been passed, and secondly that which is more significant, that notwithstanding this enormous output, consumption has increased still more, statistics showing that furnace and warehouse stocks were reduced during April approximately 33,000 tons. When it is remembered that the exporting of American pig iron has for the time ceased, a better conception of the magnitude of domestic consumption is had. The business of the past week as to fresh orders has been less active, though in many former years the aggregate tonnage would have been considered good. Some large lots of off quality, low grades have been sold at special clearance figures, and these sales have weakened the Southern iron market in consequence, though the leading brands in foundry grades are well sustained. The market for coke is active, the demand for which is a further prooof of the extraordinary consumption of pig iron throughout the country."

We quote for cash f. o. b. cars Cincinnati: Southern coke, No. 1 foundry, $14.75 to $15.25; No. 2 foundry, $14.25 to $14.50; No. 3 foundry, $13.75 to $14.25; No. 4 foundry, $13 to $13.50; gray forge, $12.75 to $13; No. 1 soft, $14.75 to $15.25; No. 2 soft, $14.25 to $14.50; Lake Superior coke, No. 1, $15.50 to $15.75; No. 2, $15 to $15.25; Hanging Rock charcoal, No. 1, $20 to $21; Jackson Co. silvery, No. 1, $16 to $16.50; Standard Southern car wheel, $18.25 to $18.75; Lake Superior charcoal, $18.50 to $19.50.

PHILADELPHIA.

May 14

There has been little variation in the week from the quietness which has characterized the market for several weeks preceding. While some weakness has been developing in pig iron it is hard to conceive how any reduction can take place in prices in view of the monthly blast furnace report which tells us that we are producing pig iron at a rate not far from 16,000,000 tons per annum and consuming at an even greater ratio. No better evidence of the country's unprecedented activity could be cited.

The stock speculation in Wall Street has had but little effect upon industrial operations. What is much more likely to affect the latter is threatened labor disturbances in the machinery trade, which are slated to come to a head next Monday.

The general situation has suffered no impairment and as far as indications go the present activity is likely to continue for an indefinite period. The dullness in new purchases of iron and steel materials may be expected to continue until well toward midsummer as all necessary requirements until that period were covered during the first quarter of the year.

PIG IRON.—For prompt delivery iron is scarce and the manufacturers, knowing from the furnace reports that consumption is still ahead of production and that there is a continued shrinkage of stocks, begin to feel that there is no necessity for seeking business on terms which are not satisfactory. Buyers on the other hand still hold on to the idea that they have little to lose by letting things rest where they are. Deliveries are being urgently called for on old contracts and many furnaces are finding it difficult to meet the requirements of their customers. A number of furnaces in this vicinity have lately been blown out and although there are others nearly ready to replace them, still the outlook for prompt deliveries is none too encouraging. Prices continue as last quoted for delivery in this city and immediate vicinity: No. 1 X foundry, $16 to $16.25; No. 2 X foundry, $15.25 to $15.50; No. 2 plain, $14.75 to $15; standard gray forge, $14.25 to $14.50; ordinary gray forge, $14; basic (chilled), $14.25 to $14.50; furnace; standard Bessemer, $15 to $15.25, furnace.

FINISHED MATERIAL.—In nearly all departments a satisfactory business is being done and in some lines there is not only unusual activity but an actual stringency and premiums are being paid for prompt deliveries. In the plate and bar trade there is less pressure of orders although there is more than enough business on the books to guarantee operation on full time to the mills. Prices are stationary as follows: Plates, one-quarter inch and thicker, 1.80c to 1.85c; iron bars, 1.50c to 1.55c; steel bars, 1.62½c to 1.70c; angles, 1.75c to 1.85c; beams and channels, 1.75c to 1.85c.

OLD MATERIAL.—The market for old material continues as in the two or three previous weeks. Bids and offers are about as follows in buyers' yards: Choice railroad scrap, $19 to $20; No. 1 yard scrap, $14 to $15; No. 2 light scrap, $13 to $14; machinery cast, $14 to $14.50; heavy steel scrap, $16.75 to $17; old iron rails, $19 to $20; old steel rails, $16.75 to $17; wrought turnings, $11.75 to $12.25; cast borings, $8.50 to $8.75; old car wheels, $17 to $18; old iron axles, $22 to $23.

THE MACHINISTS' DEMANDS.

From information at hand it appears as if the officers of the International Association of Machinists were determined to make a stand for the position it has taken in the matter of shorter hours and an increase in wages. The real test will come next Monday, May 20, and it remains to be seen how effective the organization of machinists really is. In an interview a few days ago President O'Connell of the Machinists' Union is reported to have said:

"There is nothing in sight at this time to indicate that the strike will be averted. The National Metal Trades' Association has had a full year to consider our demand for an increase of 12½ per cent in wages, in addition to a reduction from ten to nine hours' work per day, and has shown no disposition to yield. The order which has gone out, directing the union machinists of the United States to prepare to go on strike on May 20 will be carried out without fear or favor. It will be rescinded only on the condition that our demand is acceded to.

"The conference between our association and the employers' organization a year ago was brought about through the strikes in Cleveland, Columbus, Chicago, and other cities. It was agreed then to draw up a compact for settling our differences. Our demands included a nine-hour day and an increase in pay of 12½ per cent., or 25 cents a day; or, in other words, 10 hours' pay for a nine-hour day. The shorter day only has been agreed to by the Metal Trades' Association. If the officers of this organization will assure us that they will bind all its members to an adjustment of the difference between us, the strike can be averted."

At a meeting of the Administrative Council of the National Metal Trades Association, held at the Murray Hill Hotel, New York, on the afternoon of the 11th, a conference was held with representatives of the International Association of Machinists, where after a long discussion of many matters pertaining to affairs of the association, President O'Connell asked the following questions and received thereto the following replies:

Question by President O'Connell: Is the Administrative Council authorized to handle the wage question for its members and decide it with us?

Answer by Administrative Council: We have no such authority.

Question by President O'Connell: Is the National Metal Trades Association—the Administrative Council representing the National Metal Trades Association—prepared to arbitrate all the wage questions that may be referred to it?

Answer by Administrative Council: Yes, through its arbitration commission it is prepared to arbitrate all questions arising under the New York Agreement and the joint resolution of November 16, 1900.

Question by President O'Connell: What is to be done in the case of firms who have not notified that they intended to refer the matter of arbitration?

Answer by Administrative Council: All members of this association will be notified immediately to conform to the New York Agreement and joint resolution of November 16, 1900, failing in which they will not be supported by this association.

The following resolution was also endorsed by the Employers' Association:

Resolved, That in case the employes of any shop make a demand for higher wages and their employers fail to agree with them and same is passed up to arbitration as called for in the New York Agreement and joint resolution of November 16, 1900, that the findings of said arbitration board shall date back to May 20, 1901, and the matter must be arbitrated as soon as possible.

It will thus be seen that the National Metal Trades Association while willing to arbitrate all matters and let the decision be retroactive did not feel that it could with justice to its members settle the wage question nationally.

It is significant in this connection to note that the machinists employed in railroad shops are not to be disturbed, but will continue at work. The machinists' union has evidently learned that it does not pay to tamper with anything which affects the public in general.

It is a question if the machinists have not overestimated their own strength. A prominent officer of the organization is credited with saying that unless its demands were complied with 150,000 machinists would strike next week. If half of that number law down their tools it will be a great surprise to those who have closely followed the affairs of the machine trade.

PERSONAL.

Among American attendants at the meeting of the Iron and Steel Institute in London last week were W. A. Bostwick, of New York; J. A. Mathews, of the American Tin Plate Co.; W. R. Stirling, of Chicago, formerly of the Illinois Steel Co., and W. H. Foster, president of the New Process Galvanizing Co. of Niles, O.

H. F. J. Porter, formerly manager of the Chicago office of the Bethlehem Steel Co., and more recently located at the works at South Bethlehem, has been appointed New York sales agent of the company, with headquarters at 100 Broadway.

A change in the officers of the American Steel Foundry Co., St. Louis, Mo., has been made owing to the election of Rolla Wells, the former president, to the mayoralty of St. Louis. E. F. Goltra has been elected president, O. S. Pulliam, secretary, and L. J. Hayward, treasurer. Mr. Wells becomes chairman of the board of directors.

Willis C. Swift, general European agent for Henry E. Pridmore, manufacturer of molding machines, Chicago, accompanied by his wife, will return to Europe, May 22, by the Oceanic. Mr. Swift's headquarters have been in Berlin, but hereafter he will be located in London, at 39 Victoria St.

President Charles M. Schwab of the United States Steel Corporation has presented the city of Homestead, Pa., with $75,000 for the erection of a manual training school to be known as the "C. M. Schwab Manual Training School of Homestead."

Charles Wright, superintendent of the Aliquippa, Pa., plant of the Crucible Steel Co. of America, has been transferred from this plant to take charge of one of the departments of the company at the headquarters in Pittsburg.

W. H. Creahan of Warren, O., has been appointed superintendent of the new tube mills of the Youngstown (O.) Iron, Sheet and Tube Co.

With the retirement of John C. Fleming as sales agent for the Carnegie Steel Co. at Chicago, General Sales Manager Baker of the Illinois Steel Co. becomes sales representative in Chicago for both companies.

Louis Cassier, publisher of *Cassier's Magazine*, London, was one of the passengers on the St. Louis, arriving at New York, May 11th. He comes to prepare the way for a party of English machinists. "In about six weeks I shall return to England and come back immediately with 20 workmen picked from the various engineering shops of Great Britain," said Mr. Cassier. "There is a feeling there among the manufacturers that if the British workmen could see the conditions existing in the United States the latter would probably change their methods. The trades unions of Great Britain have in the past opposed anything except the day's pay in 'weekly wage,' as it is called. They have opposed piecework and automatic machinery, and everything that would tend to shorten the hours of performing a certain piece of work. The men will be divided as nearly as possible as to trades union membership, so that both sides of the labor question will have representatives. They will remain in this country about four weeks, and the cities of Pittsburg, Philadelphia, Chicago, Hartford, Providence and Milwaukee are already upon our list."

The Handy Car & Equipment Co., Old Colony Building, Chicago, has taken the exclusive selling agency of the Snow car and locomotive replacer, also the Pearson jam nut, for car and track work.

Willis L. King, of Jones & Laughlins, Ltd., of Pittsburg, Pa., has been summoned to appear before the industrial commission at Washington, D. C., on Friday, May 17.

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ENTERED AT THE POST OFFICE AT CLEVELAND, O., AS SECOND CLASS MATTER

MAY 16, 1901.

FOUNDRY APPRENTICESHIP.

By an evident misunderstanding of the purpose of the Pittsburg Foundrymen's Association, the union molders of Pittsburg recently sent a communication to that organization asking for the appointment of a committee to meet a committee of molders to discuss the apprenticeship ratio. The letter precipitated a discussion of the matter among the foundrymen, however, and the report given in our last issue showed a general belief that the ratio of 1 to 8 provided by the rules of the Iron Molders' Union was not equitable. The question was viewed, no doubt, from the standpoint of the manufacturers of machinery castings, and it was urged that the average term of active service by machinery molders was nearer 20 years than the theoretical 32 years which would be figured out from one apprentice to eight molders, the apprenticeship term being four years. No data were produced, but it was the sentiment of the Pittsburg foundrymen, who discussed the matter informally, that if it should prove to be true that the average life of a journeyman machinery molder—that is, the average number of years he worked at the trade—was 20 years, it would require that the ratio be changed to 1 to 5 simply to keep the supply of molders undiminished, saying nothing of the increased demand for skilled molders in the natural growth of the foundry industry.

The question is not a new one, and its discussion is not approached with the feeling of antagonism that it once stirred up among founders and molders. The molders are not so insistent as they once were upon the 1 to 8 ratio, though it stands as one of the rules of their union. The original ratio of 1 to 10 was modified at a time when the policy of the molders' union was far less tolerant of appeals to reason than it is today, and there appears a disposition on the part of the officers of the union now to recommend what the equities of the case call for, if they can be satisfied as to the facts.

At the Atlanta conference between the Iron Molders' Union and the National Stove Founders' Defense Association last year, and again at the Chicago conference last month, the matter was discussed long and thoroughly, and the result was an agreement by the molders' representative to submit to a vote of their membership a proposition for a ratio of 1 to 5 and one apprentice for the shop. In the *Iron Molders' Journal* the question was opened up with eminent fairness and the members were asked not to be governed by prejudice, but by the facts as they should be presented.

The stove manufacturers have gathered statistics showing that the average ratio in the shops of members of their association, union and non-union, is 1 to 6. The computation from the data thus gathered is that the stove-plate molder's average life in the trade is 14 to 16 years. The *Iron Molders' Journal*, in endeavoring to verify or correct these figures made a canvass which though partial threw some light on the question. The result is summarized thus:

> In the stove foundries of Detroit, Mich., one of the largest stove centers, the average age of journeymen molders proved to be 34½ years, and 44 per cent of the journeymen employed were 35 years of age and over; in Philadelphia, average age 39½ years, and 63½ per cent of 35 and over; in Louisville, Ky., average age 35 1-6 years, and 45 per cent of 35 and over; in Quincy, Ill., average age 37 years, 60 per cent of 35 and over. The lowest averages we received were from Reading and Columbia, Pa., and Ft. Payne, Ala., each of which gave an average of 33 years, with respectively, 57, 36 and 30 per cent of 35 and over. Taking 20 years as the average age at which an apprentice becomes a journeyman, it will be seen that the figures cited by the association [S. F. N. D. A.] are a close approximation; it will also be apparent to our readers, who will consider the percentages given above, that the great majority of those over 35 years must have ranged very close to that age. That was the case exactly. The number who reach the half-century mark and continue to follow stove-plate molding is surprisingly small. But that is aside from the main issue. If the average life of a stove-plate molder were 20 years, which is considerably in excess of the figures quoted, excluding the one boy to the shop feature, it would require a ratio of one boy to every five journeymen to make good the deficiency from natural causes.

The journal quoted above accounts for the fact that the supply of stove-plate molders has not long since proved inadequate, by the numerous strikes for which that trade was noted previous to 1891, many of these resulting in the filling up of certain foundries with boys, after relations with the union had been severed. But for nearly 10 years there has been peace, the union has been increasing its hold on the industry and the editor says frankly that "the day is not far distant when the stove-molding trade must depend for its recruits upon the union ratio, which, if it were generally recognized, and that certainly would be a condition of any agreement with the S. F. N. D. A., would in our honest opinion, prove utterly inadequate for that branch of the trade."

There has been some canvass of the machinery foundries in the same way, with the result that the supply of skilled molders is found to be inadequate to the needs of the trade, and it is well known that the Iron Molders' Union ratio is considerably higher than the average. Molding machines have come to the rescue here, however, and have served the purpose of the strikes in stove foundries in saving the situation from a demand much in excess of the supply of skilled machinery molders. That the problem will be taken up in the spirit in which the molders' union has handled

the issue raised by the stove founders is altogether likely, unless the strained relations in the machinery molders' trade, that have been uncomfortably close to the breaking point in many localities, should prevent a settlement on the question on the basis of equity.

THE AMALGAMATED ASSOCIATION AND THE IRON TRADE.

The iron trade is confronted by a peculiar labor situation. The formation of the United States Steel Corporation has nerved the Amalgamated Association of Iron, Steel and Tin Workers to efforts at extending, or rather renewing, its scope, which should have been made years ago. Improvements in machinery and methods, with which the association could not keep pace, and above all, the change from iron to steel, have greatly lessened the field and strength of this once powerful and comprehensive organization. As long as the lines of manufacture in which it lost control were separate in ownership from those in which it still retained a hold, the loss was of less consequence, but the situation is greatly changed by the merging of ownership which has just taken place, and it is now patent that the Amalgamated Association must get out of its rut and face conditions squarely.

The association's decadence in power for years back has been its inability to grasp the significance of new developments in the technics of iron manufacture Mill after mill has been lost to the organization because its owners had increased output by means of improved machinery costing large sums of money, and were denied the benefit in lower tonnage rates which the increased output and lessened manual exertion and skill required per ton fully warranted. Thus the branches of the iron and steel trade which have made the greatest progress have been the first to be lost to the association, and the ones it now controls, or partly controls, are those in which the least progress has been made. There is no reason to believe that these branches will not in turn make improvements which will force an abandonment of Amalgamated control.

The membership of the association has been drawn almost exclusively from the "skilled" men in the iron and steel mills. In those mills which are fully controlled the membership is but a small fraction of the total number of employes, nor has the association at any time desired these other employes as members. It follows that as the required skill decreases, so must the strength of the association decrease. At this juncture has come talk about a general union to embrace all the employes of the United States Steel Corporation, and of the other iron and steel interests as well. This idea in the rough is a good one, but becomes ridiculous when coupled with the inference that the Amalgamated Association should be the nucleus, with its present membership and policy. The rank and file of the association has for some time been clamoring for greater efforts on the part of the national officers to bring into the association the workers in other branches not now recognized, but little actual work has been done in this direction. It is not surprising that they shrink from this task. The traditions and policy of the association are not such as to attract membership in branches not now represented. Its strength has been among skilled workers only and among those whose duties are clearly defined and are reduced to the putting of so many tons of material through some certain operation. It does not afford means of recognizing varying degrees of skill, and by its practices all men are placed on a level. If the employes of the United States Steel Corporation and the other iron and steel interests are to be brought into one union no new one need be formed, the American Federation of Labor being ready made for the occasion. Its principles have little in common with those of the Amalgamated Association, which has never had any important contest as to hours of labor except when it tried to prevent a reduction of hours by running puddle mills three turns instead of two.

It does not seem probable, therefore, that the Amalgamated Association can greatly increase its power or scope this summer. It may have a contest, and may gain some points, but it can scarcely take any step which will permanently arrest the decline which set in years ago and which is backed by the power of economic principles more potent than the arbitrary power of even the new steel combine.

LOW PRICED BUSINESS STILL IN THE MILLS.

That the bar iron and sheet mills of the country are still working on a large amount of low priced business, contracted during the period of extremely low prices less than a year ago, is shown by the sales sheets of the manufacturers, submitted to the scale committee of the Amalgamated Association for the bi-monthly adjustment of the bar iron and sheet workers' scales last week. The sales sheets for the months of January and February of the bar iron manufacturers showed an average selling price of 1.29c, although at that time iron bars were selling in the Valley on new contracts at 1.40c. During the months of March and April the price advanced to 1.45c and 1.50c at the mill and still the records of shipments showed an average selling price of a fraction more than 1.32c. This indicates that nearly one-half of the output of these mills in the two months was shipped on old contracts for bars at 1c or less. This condition is even more pronounced in the case of steel bars, as considerable tonnage is to be delivered during the next two months on contracts ranging from 90c to 1c. Indeed, the bulk of the low priced business of last July and August was for steel.

The sheet manufacturers, too, it seems, in their eagerness to get business some months ago, closed up a large amount of low priced contracts, many of which have not yet been disposed of, the bi-monthly sales sheet average being a trifle below 3c. The bar and sheet mill workers of the Amalgamated Association felt keenly disappointed over their failure to secure an advance as a result of the last adjustment. They failed to consider the low priced contracts of last year, and based their expectations on new business alone, at present moderately high prices.

Jones & Laughlins, Ltd., of Pittsburg, have decided to erect a large blooming mill at their South Side plant to replace the small two-high affair which supplies a portion of the mill at present. Julian Kennedy has been retained to prepare the plans for a modern three-high mill with a daily capacity of about 2,500 tons. The new mill will be erected on the site of the mill to be dismantled.

SEMI-ANNUAL CONVENTION OF THE N. F. A.

(*Special Telegram.*)

NIAGARA FALLS, N. Y., May 15.—The National Founders' Association is holding its semi-annual convention at the International Hotel. This morning's session is being presided over by Vice-President A. C. Pessano in the absence of President Hoyt and is given up to the reading and consideration of reports of officers.

The Administrative Council held several sessions on Monday and Tuesday to consider the matters which will be brought before the convention, chief among which are the questions growing out of the Cleveland strike settlement and wages for molders for the coming year. The standard wage rate and differentials from same as referred to in the Cleveland wage resolutions will also come before the convention as well as the conditions under which the New York agreement is being carried out.

At a meeting of the administrative council Chas. L. Bauer, of Springfield, O., was elected vice chairman for fourth district to succeeed Thos. P. Gaddis of Dayton, resigned. In place of E. A. Moore, of Pennsylvania Iron Works, Philadelphia, who has resigned from third district committee Wm. H. Hallowell, of the Harrison Safety Boiler Works, Philadelphia, was elected. I. W. Frank, of Pittsburg, succeeds Mr. Moore as chairman of third district committee.

The following are among the delegates so far registered: H. W. Hoyt, Gates Iron Works, Chicago; W. H. Pfahler, Abram Cox Stove Co., Philadelphia; O. P. Letchworth, Pratt and Letchworth Co., Buffalo; A. C. Pessano, Geo. V. Cresson Co., Philadelphia; J. R. Russel, Detroit; F. T. Towne, Yale & Towne Mfg. Co.; Stamford, Conn.; C. L. Newcomb, Deane Steam Pump Co., Holyoke, Mass.; H. N. Covell, Lidgerwood Mfg. Co., Brooklyn; Jos. A. Stone, Riverside Foundry Co., Cleveland; Chas. L. Bauer, Warder, Bushnell and Glessner Co., Springfield; Geo. Q. Thornton, Carondelet Foundry Co., St. Louis; Nathaniel French, Bettendorf Metal Wheel Co., Davenport, Ia.; Ellis L. Rowe, Rensselaer Mfg. Co., Troy, N. Y.; Jno. A. Rathbone, U. S. Heater Co., Detroit; Philip Medart, Medart Patent Pulley Co, St. Louis; A. B. Wenink, Walworth Run Foundry Co., Cleveland; Geo. B. Buckingham, Arcade Malleable Iron Co., Worcester, Mass.; Willis Brown, Walker Foundry Co., Erie, Pa.; S. S. Gould, Gould Mfg. Co., Seneca Falls, N. Y.; Geo. H. Graham, Oriskany Malleable Iron Co., Oriskany, N. Y.; J. H. Webster, Variety Iron Works, Cleveland, O.; Geo. Bartol, Otis Steel Co., Ltd., Cleveland, O.; S. W. Tucker, Fulton Foundry Co., Cleveland; Chas. Patterson and C. A. Patterson, Patterson Foundry Co., Cleveland; Frank Fiebeger, Akron Foundry Co., Akron, O.; Wm. Ferguson, Wm. Ferguson Foundry Co., Chicago; J. A. Coykendall, Fraser & Chalmers, Chicago; O. W. Greenslade, Greenslade Foundry Co., Milwaukee; W. A. Jones, Chicago; J. F. Blauvelt, New England Butt Co., Providence, R. I.; R. W. North, North Bros. Mfg. Co., Philadelphia; Henry A. Carpenter, A. Carpenter and Sons Foundry Co., Providence, R. I.; R. D. Reed, H. D. Smith Co., Westfield, Mass.; Fred F. Stockwell and H. R. Luther, Barbour-Stockwell Co., Cambridgeport, Mass.; Chas. T. Colvin, Colvin Foundry Co., Providence, R. I.; James Eastwood, Benj. Eastwood Co., Paterson, N. J.; J. F. Caffrey, Smith & Caffrey, Syracuse; H. K. McLean, Link Belt Machinery Co., Chicago; G. L. Hopping, Tarrant Foundry Co., Chicago; H. R. Micks, Rumsey & Co., Seneca Falls, N. Y.; Walter Perry, Farrel Foundry and Machine Co., Ansonia, Conn.; W. S. McMillan, Richmond Stove Co., Norwich, Conn.; L. J. McGrath, Thos. Devlin & Co., Philadelphia; W. E. Warner, E. C. Stearns & Co., Syracuse, N. Y.; A. E. Omens, Utica Steam & Boiler Works, Utica, N. Y.; J. E. Hunter, James Hunter Machine Co., North Adams, Mass.; Alex. Adams, St. Paul Foundry Co., St. Paul, Minn.; A. C. Stebbins, Niles-Bement-Pond Co., Plainfield, N. J.; D. J. Kilby, Kilby Mfg. Co., Cleveland, O.; Jno. E. Harbster, Reading Hardware Co., Reading, Pa.; W. F. Morris, Morris Machine Works, Baldwinsville, N. Y.; Lewis Searing, Denver Engineering Works, Denver, Col.; J. H. Caldwell, Ludlow Valve Mfg. Co., Troy, N. Y.; T. W. Woodburn, Saml. L. Moore & Sons Co., Elizabeth, N. J.; H. M. Wilson, Taylor-Wilson Co., Allegheny, Pa.; H. C. Challindsworth, C. & G. Cooper Co., Mt. Vernon, O.; W. W. Balkwill, Cleveland Steel Casting Co., Cleveland, O.; L. S. Dickey, American Ship Building Co., Cleveland; Wm. N. Kuhns, Kuhns Bros., Dayton, O.; Wm. M. Taylor, Chandler & Taylor Co., Indianapolis, Ind.; B. H. Sanders, Pleuger & Henger Mfg. Co., St. Louis; Lincoln Haney, Globe Foundry Co., Cincinnati; Henry J. Weber, Newport Iron & Brass Foundry, Newport, Ky.; C. Edwin Thompson, Pacific Iron Works, Bridgeport, Conn.; A. G. Wilson, Hoefinghoff & Laue Foundry Co., Cincinnati; W. W. Cheney, S. Cheney & Son., Manlius, N. Y.; Victor E. Knecht, Victor Knecht, Cincinnati; W. E. Rockwood, Rockwood Mfg. Co., Indianapolis, Ind.; Chris. Ehrhart, Cincinnati; H. J. Boggis, Taylor & Boggis Foundry Co., Cleveland, O.; Jno. M. Harrison, Shickle, Harrison & Howard Iron Co., St. Louis; J. L. Ketcham, Brown-Ketcham Iron Works, Indianapolis; W. F. Foos, Foos Mfg. Co., Springfield, O.; H. J. Rober, Bettendorf Metal Wheel Co., Springfield O.; J. E. Bindley, I. & E. Greenwald Co., Cincinnati; Robert H. Jeffrey, Jeffrey Mfg. Co., Columbus, O.; H. C. Ryding and Oliver Phelps, Lorain Foundry Co., Lorain, O.; R. H. Verian, Enterprise Foundry Co., Rochester; Stuart R. Carr, Stuart R. Carr & Co., Baltimore; P. Kennedy, P. Kennedy Foundry, Baltimore; Geo. T. Marsh, South Baltimore Foundry, Baltimore, Md.; P. M. Ginther, J. Ginther Sons, Buffalo; S. H. Chapman and W. C. Morris, Ontario Wind Engine & Pump Co., Toronto, Ont.; E. G. Munson, Munson Bros. Co., Utica, N. Y.; H. M. Leland, Leland & Faulconer Mfg. Co., Detroit; James Barclay, Deere and Mansur Co., Moline, Ill.; C. T. Morey, Deere & Co., Moline, Ill.; W. W. Green, Garden City Fan Co., Chicago; Albert Hoppin, Buffalo manager, E. P. Allis Co.; R. C. Hickok, H. G. Trout & Co., Buffalo; Henry W. Wendt, Buffalo Forge Co., Buffalo.

As a great deal of work is to come before the association the business sessions will continue through Thursday.

Retirement of John C. Fleming.

With the retirement of Mr. John C. Fleming as manager of the Chicago office of the Carnegie Co., on the 15th inst., is ended a connection extending over 17 years. Mr. Fleming first became associated with the Carnegie interests in 1884 through Wilson, Walker & Co., of Pittsburg, which firm was absorbed by Carnegie, Phipps & Co., Ltd., in 1886. In the same year Mr. Fleming also became the Chicago representative of Carnegie Brothers & Co., who, prior to this time, had covered the western territory through traveling salesmen. Indeed, so doubtful were they that a permanent office in that city would pay, that they contracted for only a portion of his time. The following year, however, so large a factor had he made the Carnegie interests in the western trade, that the company opened a permanent office in Chicago and appointed him its manager. Since that time, the business has steadily grown, and in 1889, Mr. Carnegie recognized his services by taking him in as a partner.

Mr. Fleming first became connected with the iron trade by entering the employ of Rogers & Co., of Chicago, which firm failed in 1883, as a result of the failure of the Union Iron & Steel Co. He then engaged in business for himself as an iron broker.

He now retires to private life for a well earned rest with the sincere regrets and best wishes of all his business associates.

The Bessemer Coke Co. of Pittsburg, Pa., has enlarged its holdings in the Connellsville region by the purchase of the property of the Columbia Coke Co. owning valuable coal lands in the new Klondike field of the Connellsville vein together with a plant of 100 ovens. The Bessemer company was formed five years ago with 100 ovens, now known as the Humphreys plant, in the center of the northern half of the Connellsville region, and since that time it has grown to be the second largest independent producer of the region. Some time ago the Bessemer company purchased the Duquesne Coal & Coke Co. and later the Empire Coke Co., building a short time ago the Griffin works in the Klondike district. The scarcity of the Connellsville product was early recognized and sufficient coal was procured to warrant many more ovens than at present possessed. The company operates 1,000 ovens, with a yearly production of over 600,000 tons. The Griffin works is located near Masontown, in the Klondike district, and by the absorption of the Columbia Co. plant, which adjoins it, secures very extensive operations at this point.

PRESENT AND FUTURE CHILLED CAST IRON CAR WHEELS.

BY WILLIAM FAWCETT.

The superintendents of motive power and other railroad officials who have given only a passing thought to the manufacture of chilled cast iron car wheels cannot comprehend the responsibility involved in the management of a car wheel foundry. There is no material used in car construction that has to pass through such a severe and critical inspection as the chilled cast iron wheel of the present day. Before a freight car wheel is accepted or put into service each and every one is closely inspected and has to meet the following requirements, which form only a part of a late wheel specification of a prominent railroad:

All wheels are to be inspected at the works of the maker; all wheels offered for inspection must be arranged in rows, all wheels of the same date of casting being grouped together. They must, during inspection, receive three blows with a twelve-pound sledge at three different points on the inside of the flange between the brackets, and after a close inspection show no cracks, and be free from every visible foundry defect. The physical test which wheels are subjected to consists in the selection of two wheels at random by the railroad company's inspector from each fifty wheels, or fraction thereof of the same date of casting. These two wheels are then subjected, at the option of the inspector, to either one or the other of the following tests for physical strength:

The drop test is that the wheel must be placed flange downward on an anvil block of not less than 1,700 pounds weight, having three supports not less than five inches wide for the flange of the wheel to rest upon. In this position it must be struck centrally upon the hub by a weight of 140 pounds falling from the height of 12 feet. The striking face of the weight must be flat, having a diameter of not less than seven inches. The wheel must stand 12 blows without breaking in two or more pieces. If it passes this test, and satisfactorily meets all the other requirements, and the other test wheel selected stands the thermal test, and both show the required depth of chill, the balance of the 50 wheels is accepted. If either of the two wheels fails in any of the requirements, the lot is rejected.

The thermal test is designed to guard against the failure of wheels from strains due to heat generated by the application of the brake shoe. This test calls for the wheel to be laid face up on a sand bed, and a channel way 1⅛ inches wide by four inches deep molded with sand around the wheel. The clean tread of the wheel must form one side of the channel way, and the flange the bottom. This channel way must be filled to the top with hot molten cast iron taken direct from the spout of the cupola in one ladle and poured direct from it at one point into the channel way. An examination of the wheel is then made after two minutes, and if it is found broken, or any crack appear in the plate extending through the tread, the 50 wheels represented by this test are rejected. As the quality of the metal and the depth of chill are further requirements all test wheels must be broken for examination. The metal in the plates must show a clean soft grey iron breaking with a ragged fracture. The depth of clean white iron must not exceed ⅞ of an inch, or less than ⅝ of an inch in the middle of the tread, and must not be more than ¾, or less than ½ inch in the throat; it must not show any clean white iron around the anchors or chaplets, or have a mottled appearance in any part of the wheel at a greater distance than 1½ inches from the throat and tread.

Specifications Do Not Insure Life and Mileage.

It is safe to assume that the wheel maker can easily meet the drop or thermal tests, and give the required depth of chill and also show the inspector a clean, soft grey iron plate in all test wheels when broken; but the life and mileage may still be unsatisfactory. It is not wisdom for the superintendents of motive power to arrogate to themselves the right of absolute dictation in having the plates of all wheels when broken show a clean, soft grey iron, without any white or mottled appearance. It is well-known to the progressive wheel manufacturer that a car wheel, to give six years' service under heavy loaded freight cars running at a high rate of speed, requires to be cast with a strong, mottled, hard, dense, close homogeneous chilling metal, which is known to them from long experience to have excellent qualities for wearing surfaces, and gives to the tread or chilled portion a close, dense-grained metal, possessing all the qualities of a steel-tired wheel. The manufacturers are obliged to live strictly up to the specifications, to have their product pass inspection and show a clean, soft grey metal plate, regardless of the consequences which are sure to follow.

Car wheels by the present method are cast from one ladle of molten metal, and there can be no dividing line drawn between the chilled tread and plates. The elements in the molten metal that give a soft grey metal plate enter into the chilled portion of the tread, and the ill effects of it can be readily traced to the limited mileage, thus accounting for the short life of cast iron wheels made in accordance with the railroad's own specifications. The slightest deviation from them would sacrifice a whole day's cast to the maker.

The Depth of Chill Requirement.

The lines are too closely drawn on the depth of chill. The difference between ⅝ and ⅞ of an inch makes too small limits to keep between, while at 1-32 of an inch above or below these figures the inspector rejects the lot. Some of these inspectors come clothed with authority to make it unpleasant for the wheel maker, and are at times very exacting in all the requirements asked for in the specifications, it being much easier for them to be critical than correct in such matters.

It may be asked why the railroad officials should dictate to the wheel maker the exact depth of chill (no more or no less) and also demand clean, soft grey plates, and then specify six years' service guarantee with every wheel. Would it not be wisdom for them to leave the depth of chill and the softness of the plates to the discretion of the wheel manufacturer, or else make this uncalled-for inspection an absolute mileage guarantee, releasing the manufacturer from all further responsibility. After a lot of wheels has satisfactorily passed the above inspection, the specifications call for a six years' service guarantee with all freight car wheels, and two years' service with all passenger, engine and tender truck wheels. They further require the manufacturer to rejlace (without expense) every wheel not filling the above mileage guarantee, and all those that are removed from service on account of failures due to any inherent defect, with a new wheel made in accordance with the specifications, and that replaced wheels must be furnished subject to the same inspection as the original wheel. It is also to be understood that any defect in wheels which calls for removal (with a very few exceptions) shall be considered inherent defects. It is therefore a well understood fact that cast iron wheels must possess several distinct features before they are ever accepted or put into service:

First, they must satisfactorily pass a severe and critical inspection and be free from every visible foundry defect.

Second, they must have strength and tenacity enough to stand the drop test, and show physical strength enough to be above danger line.

Third, they must be free from all shrinkage strains to withstand the thermal test, which suddenly heats up the tread unevenly to a black red heat, leaving the plates and center cold.

Fourth, the wheel must have a certain depth of chill (no more and no less) and must show clean, soft gray plates.

Inspectors should accept the wheels without reference to accident or fracture when living up to the specifications. They should not lose sight of common sense.

Large Percentage of Short-lived Wheels.

It has been the writer's custom for years when having old car wheels unloaded at the works, to note down the year in which they were made and the maker's name. In connection with the works is a well-equipped physical laboratory where all incoming material is carefully tested, especially old car wheels. Each day a few wheels are selected from the products of the different makers and tested for our own private information. When broken a piece of each wheel, with the shop number attached, is then sent to our chemical laboratory, where a careful analysis is made and recorded against that wheel and number. By this method we keep in close touch with what other wheel makers are doing, and by a careful study of their shortcomings, we are able to correct our own. In a lot of 9,500 old car wheels already received this year from

ten different railroads, 7 east and 3 west of the Mississippi river, we found the product of 12 wheel foundries with the following results:

6 per cent of them were made in 1895.
9 per cent of them were made in 1896.
11 per cent of them were made in 1897.
39 per cent of them were made in 1898.
19 per cent of them were made in 1899.
9 per cent of them were made in 1900.

Seven per cent were scattered back to 1880. Some few were made in the present year, the maker's name and supposed cause of removal being withheld.

The gradual increase in weight and size of freight cars has during the past five years been so great, we do not believe it is wisdom for the wheel manufacturers to guarantee six years' service with wheels placed under heavy box cars running at a high rate of speed night and day, Sundays and holidays, making on an average of 2,800 miles per month, loaded both ways to their full capacity. The chilled cast iron car wheel of the present time seems to be the target upon which all the big and little guns of railroads are trained; but they must not expect too much of wheels made strictly to their own specifications, and cast from the best brand of charcoal iron by men of integrity and capacity who have been conducting their business for over half a century, and have faithfully earned a reputation for excellence for their product and are today an honor to the iron industry. The wheel maker is not at his best when his ambition is tied hand and foot by a too closely worded wheel specification, which should be corrected.

Air Furnace Metal and Chemical Analysis.

It is safe to predict that before many years of the new century have passed, all chilled cast iron car wheels will be manufactured in geographical centers where the resources, adaptability and advantages are present for that class of work. There seems to be a growing demand among the superintendents of motive power of some of the leading railroads for a better and more uniform grade of wheels than they have been receiving of late years. But before they can accomplish this, they will have to order all their wheels to be strictly made of a certain chemical composition, and specify that they must be cast from an open-hearth gas furnace metal. There is no doubt that a plant capable of turning out car wheels with any chemical analysis called for is practicable and highly desirable. This method of ordering wheels will give the railroads just such a wheel as they order and pay for; it will also relieve the manufacturer from a great deal of trouble and responsibility, and exclude all elaborate deductions of the wheel inspector, as everything will be governed by their chemical analysis. If railroads insist upon this method of ordering wheels, they will have to specify a definite chemical composition, and abolish the physical tests and mileage guarantee; and it will only take the wheel manufacturer a short time to prepare himself with the means to furnish just such a wheel as they may see proper to order.

The writer has been asked by several railroad officials if wheel makers were prepared through their chemical laboratories to furnish wheels of any definite chemical composition that they may see proper to order in their wheel specifications. I must admit that they are not by their present methods of casting wheels. Carbon, sulphur and phosphorus will be the determining factors, and these three elements are unmanageable in a cupola. It is hard to realize the revolution that this development will cause in the car wheel industry. It not only calls for new plants, but a radical change in existing ones, but in either case it cannot help but be beneficial in the end.

Car Wheel Foundry for Continuous Melting.

I have before me the working plans, and all the details of an ideal car wheel foundry with a capacity of 1,200 wheels per day of 24 hours. The building is designed with the view of continuous molding, pouring and putting the wheels into annealing pits. In planning the works, special attention was given to all the necessary conveniences for handling the material cheaply from the yard to the finished product, it being the object to make this plant up to date in every particular detail, embodying all the latest and best improvements known.

Without going into the cost and size of buildings I will give a few of the general arrangements to enable the progressive wheel maker to see some of the advantages it possesses over the present methods of molding wheels in the forenoon and pouring them by the same men in the afternoon from each successive tap from a cupola with variable results as to uniformity, depth of chill and physical qualities. In connection with the molding department in this ideal plant are three open-hearth gas furnaces and four modern cupolas of the required capacity. It is not proposed that these will be in use all the time, but only at stated intervals. It is not intended to take the molten metal direct from the blast furnace, but to go into the open market and buy a suitable quality of pig metal from different localities, and after sampling it carefully by competent men, charge it into the cupolas in various proportions and relative quantities. It would be melted in the best possible condition and poured into the open-hearth furnaces and kept there under a proper heat temperature until all the objectionable elements mentioned in the wheel specifications are taken out of the metal, and those required added and chemically united. The open-hearth gas furnaces are intended to be of the latest and best designs and to be under the direction of a metallurgist of ability, who fully understands the chemical composition of the metal wanted to fill any required analysis called for with absolute and unerring accuracy. He will also fully understand the nature and the effect that each element will have separately on the product, and the combined influence of all the elements when chemically united.

After the molten metal has remained in the open-hearth furnace until it is known to be of the proper temperature and chemical composition, it is then drawn from the furnace in a proper size ladle and removed from all further heat influence; the wheels are then poured from it at the same temperature, thus giving to the product an even shrinkage, a uniform depth of chill and physical strength far beyond the requirements for ordinary usage. There will be cast on each wheel a spur about 1½ inches high. The wheel inspector on looking over each day's cast for foundry defects, will break off as many spurs as he may deem proper, and send them to the railroad's chemical laboratory where a careful analysis will be made for all the elements, and if they all come within the lines drawn in the wheel specifications, that day's cast will be accepted. If any of the elements are on the outside of those lines, that day's cast will be rejected.

It is the intention in this ideal plans to have the molding carried on continuously by three gangs of molders and their helpers, divided off into three 8-hour shifts. Ten molders and their helpers start in on a shift of eight hours, each molder putting up five wheels per hour; after them come at stated intervals a gang of trained men under the management of a man of executive ability, whose duty it will be to attend strictly to pouring the wheels, taking them out of the chills and putting them into the annealing pits, preparing the sand, and leaving everything necessary in good shape for the next shift of molders. These men being trained in only one special branch of the business, and doing only that one thing, will soon learn to do it quickly, cheaply and accurately.

The successful wheel maker of the future will be prepared to make wheels of any chemical composition desired. He will be able to control the carbon, sulphur and phosphorus, and keep them within very narrow limits. When these three elements can be regulated to a nicety, the wheels will be more uniform, their life more satisfactory, and the physical strength increased far above all future requirements, the depth and quality of the chill regulated to an absolute certainty and the wearing qualities of the tread greatly prolonged.

ST. CHARLES, MO.

The Pennsylvania Steel Co. of Steelton, Pa., has announced that beginning June 1, the wages of all employes will be restored to the basis in force prior to Jan. 1, 1901. This is an advance of about 10 per cent.

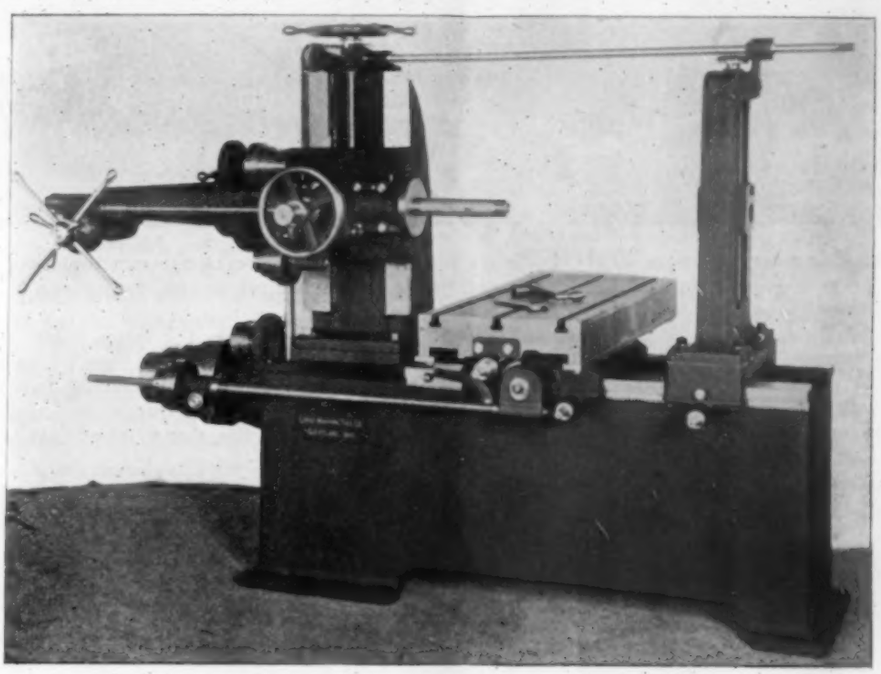
The McFarland Foundry & Machine Works at Trenton, N. J., have been leased by Ellis R. Meeker, of Elizabeth, N. J.

The men employed in the tube department of the plant of the Reading Iron Co. at Reading, Pa., went on a strike last week for an advance of about 10 per cent.

HORIZONTAL BORING AND MILLING MACHINE.

All machinists are more or less familiar with the horizontal boring machine having the overhanging knee similar to the shaper. With this type of a tool it has been found difficult to maintain alignment after it has been secured, as the weight of the work and thrust and twist of the tool cause the piece to come out untrue just as is done on the shaper. This has been realized and partly provided against by an adjusting nut on the outer of the two screws supporting the knee. The illustration shows a machine which has been designed to overcome this fault by removing the cause. The relative motion of the spindle and wake is accomplished by raising and lowering the head, which is often the lighter piece, and moreover brings the work always at the right height.

The bed is of deep box section and rests upon three points, thus securing stability and guarding against flexure from uneven floor or foundation. To this is rigidly attached the main upright which carries the saddle for the spindle. When boring, the outer end of the spindle is held in the smaller upright and the counterbalanced saddle and outer support are moved simultaneously by means of the shaft, bevel-gears and screws which are provided with adjustable dials reading to thousandths.



HORIZONTAL BORING AND MILLING MACHINE.

The boring spindle is of crucible steel threaded to receive a chuck or other attachment. It is mounted in a sleeve which terminates in a face plate, thus affording means for attaching face-mills or facing heads. It has both quick and slow motion, conveniently arranged, and has four changes of automatic feed. The inclosed back gear is very compact. All gears are planed to insure quiet running. The gibs are of the square lock variety, tapering to fit the entire length. The narrow and comparatively long guiding edges, both at the front of the machine, avoid the cramping action. The table is specially deep and stiff. It is provided with automatic feed having six changes and automatic stop.

The idea of accurate and permanent alignment has been the prominent one in the design of this machine, a vital feature in a tool-producing machine to make what the makers claim for it, a "precision machine." The following are some of the principal dimensions: Spindle 2¼ inches diameter, No. 4 Morse taper hole, 18-inch motion. Swing over table, 27 inches. Size of table, 18x42 inches, with automatic cross feed of 30 inches, having automatic stop. Maximum distance from end of spindle to yoke, 3 feet, 6 inches. This machine is the product of the Lucas Machine Tool Co. of Cleveland, and being put on the market through Hill, Clarke & Co., as selling agents.

A SHEET MILL FOR STOVE MANUFACTURERS.

The address of President Stanhope Boal, at the 30th annual meeting of the National Association of Stove Manufacturers at Boston last week referred to two matters of importance to the stove industry—a co-operative project for the manufacture of sheets and the proposed consolidation of stove works. The latter, as noted in these columns some time ago, does not seem at all a probability. Mr. Boal's comments on the two propositions are as follows:

"If the use of sheet steel continues to increase in the manufacture of stoves and ranges as rapidly as it has during the past few years, a sheet mill will soon be of as much importance to a stove plant as is the molding shop. Since the production of sheet steel has been controlled by one company, the profits in its manufacture are very large, and under present conditions will continue to be so indefinitely. Therefore, if 25 or 30 of us would form a company and each subscribe from $10,000 to $15,000 of the capital stock, amounting to about $300,000, it would be quite sufficient to build a thoroughly modern sheet mill, the entire product of which would be consumed by the requirements of its own stockholders, who would receive in good dividends the profits on the output of the mill. The services of a thoroughly experienced and capable man to manage such a mill can now be easily obtained—there being a number of them who would be pleased to engage in such an enterprise and subscribe to the capital stock to such an extent as would be agreeable to the other stockholders. The extensive use of steel in the manufacture of our product has caused innovations in our business to such a pronounced extent that it has materially changed the method for figuring cost as adopted by this association and used so extensively by our members. Therefore a committee could wisely be appointed to formulate a plan for figuring costs that would be applicable to the present conditions. . . .

"It has been stated many times that some of these problems to which I have briefly referred, together with others, could be easily solved and these objectionable conditions conquered through the formation of a consolidated company; but has it not been quite clearly proven that a sufficient number of concerns in the stove industry cannot be brought together in one great company which could accomplish these desired results? Some say that they can; but up to the present time this has not partaken of the slightest semblance of success. A consolidated company that could control these conditions would have to completely monopolize the stove industry, and this I do not believe will be accomplished during our lives at least. Therefore, let us turn our attention more closely to our associations; the good they have done is insignificant as compared with the good they can do, if we will give them the time and consideration they deserve."

SHOP BETTERMENT AT A FORGING PLANT.

A conspicuous example of shop betterment institutions in an industry ordinarily considered irremediably given over to grime and discomfort and the severest tax upon the endurance of operatives, is the drop forging plant of J. H. Williams & Co., of Brooklyn, N. Y. We present some views that illustrate the main features of the company's provisions for the welfare of its employes. One of the best of the institutions started by this company is the mutual aid society contributed to by the firm and the members—and every employe may be a member—providing weekly cash payments for the sick and immediate cash payments in case of death. A physician under salary attends sick members and provides medicines without further charge. None of the men who are members of this society need pay doctors' bills, medicine bills, or go without income in time of sickness. Should any employe leave who has been a member of the mutual aid a year without receiving sick benefit, he is refunded one-half of all his payments. The men make an annual contribution to local hospitals and the firm gives an equal amount, the total being the largest from any plant in Brooklyn, for hospital work. The men own their own tools, but the company insures these, asking in return the service of the men in the works fire department.

The plan of giving prizes for suggestions of improvement in methods is adopted, and in a given six months prizes of $50, $25, $15, and $10 respectively were given. The company some time ago, without any motion by the men, put its works on a nine-hour day, with 10 hours' pay. The output has been rather increased than diminished. Piece work is the rule in some departments. The company gives the piece workers the benefit of rapid work. The reason is that the well-paid man cares for machinery, since he loses by the time required for repairs; nor does he waste material. It is found, also, since it is the rule of the shop that the men replace bad work and pay for the materials, that well-paid men save in the item of imperfect work, as well as in repairs, interest, fuel and other ways.

FIG. 1.—VIEW OF WORKS, SHOWING SEPARATE CHIMNEY FOR EACH FORGE FIRE, OVERHEAD VENTILATION, OUTLET FOR EMERY DUST EXHAUSTER; ON THE RIGHT, VENTILATING SMOKE STACKS FOR SMALL FORGE.

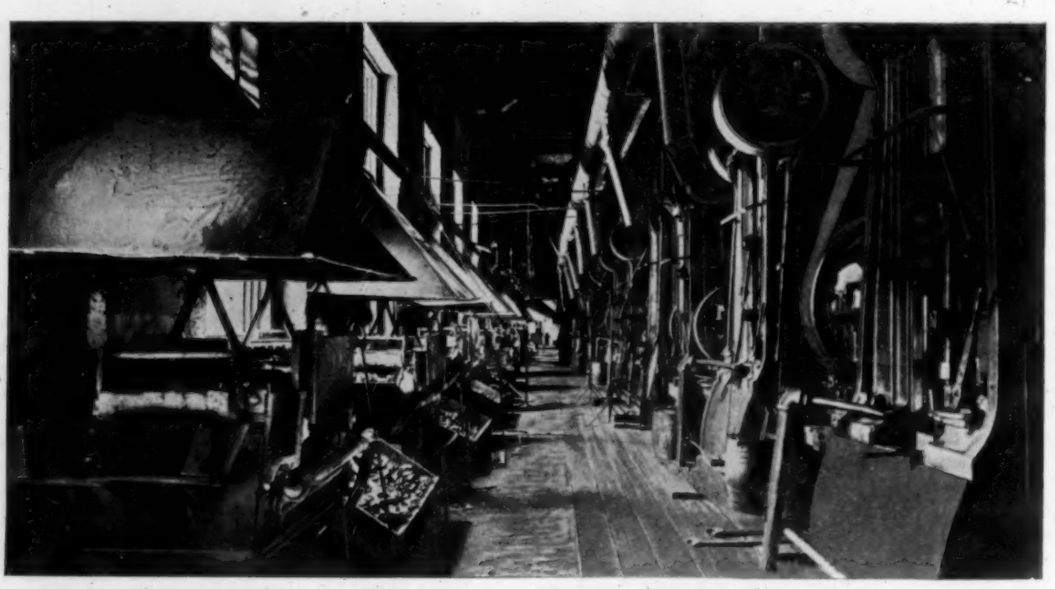


FIG. 2.—VIEW IN MAIN FORGE BACK OF HAMMERS. SHOWS INDIVIDUAL FURNACE HOODS, ALSO MAIN PIPE OF FRESH AIR COOLING SYSTEM, WITH DOWNWARD PROJECTING ADJUSTABLE OUTLETS.

Fig. 1 is a general view of a portion of the plant. The noteworthy features are the separate chimneys over each fire in the forge shops, the overhead ventilating system, the outlet for emery dust, also the ventilating smoke stacks for the small forge. The last named are shown on the extreme right

of the cut. Emery dust is exhausted fully from the grinding department. Believing that dust is detrimental to health and efficiency, the company has covered the floors of the forge shops and similar departments with iron plates, which promote cleanliness, both for men and machinery. In forge shops, besides individual chimneys for each fire and the usual facilities of ventilation by windows and by overhead fanlights, clean, fresh air is drawn in from a point high above the roof by powerful fans and distributed through each forge building until it descends over each man's head through a flexible pipe under his control, thus assuring an abundant supply of cool, pure air. In the large forge shown in Fig. 2 are over 30 furnaces, running under forced blast, yet it is found that in hot weather, since the cooling system began, the men work steadily, output is kept up and the management has not been compelled to shut down on extremely warm days, as of old.

FIG. 3.—TOILET ROOMS AND SINKS WITH OVERHEAD SPRAY, BATH ROOM, CLOSET, ETC.

Figs. 3 and 4 show the toilet and bathing conveniences provided for the men. In addition to basins and sprays in each room there are four bathrooms, one for each department, with showers and hot and cold water, also a tank with wringer for washing clothes, and a warm room for drying them. In Fig. 3 is shown one of the toilet rooms with sink, overhead sprays, water closet, cuspidor, bath room, and in the background expanded metal lockers. Fig. 4 shows a bath room in the tempering department. The shower bath is in the background at the left. A view is also given of the expanded metal lockers, heating system, and portion of sink with overhead spray. Fig. 5 represents the shop library.

The comment of William C. Redfield, treasurer of the company, upon the work it has done in shop betterments is that it pays. "It pays because a man is more than a machine. It pays because the rate of wages is not the chief factor in cost, but rather the rate of production. A clean man produces more in the long run than a dirty man. A well informed man produces more than an ignorant man. A justly treated man produces more than one who is unjustly treated. A contented man is a better and cheaper producer than a discontented man. A well paid man is a more economical producer than an ill paid man."

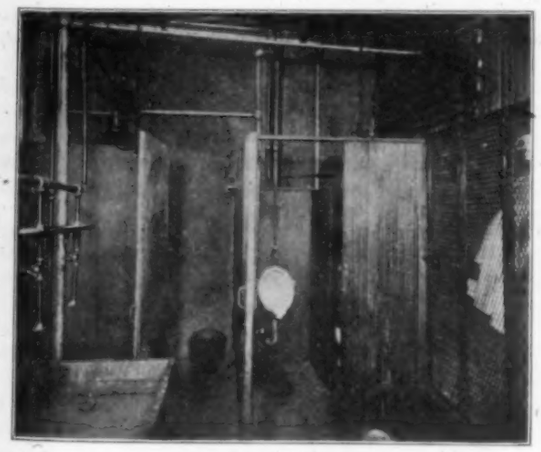


FIG. 4.—BATH ROOM, LOCKERS, ETC., IN TEMPERING DEPARTMENT.

C. R. Wooters, for 26 years connected with gas engine manufacture, will not accompany the McMyler Mfg. Co. of Cleveland to Warren, O., where this company is building a new plant. He has associated himself with the Chase Machine Co., of Cleveland, which will continue the manufacture of the Wooters stationary and marine gas and gasoline engines. The Chase Machine Co. has purchased the entire gas engine outfit of the McMyler Mfg. Co., including patterns and templets and finished and incomplete engines. With a view to better handling the business the Chase Machine Co. has recently purchased more land and erected an addition which has been completely equipped. It will be in charge of Mr. Wooters.

The Carnegie Tube Co. was organized in Pittsburg May 7 with a capital of $150,000. The company will build a lap weld tube plant at West Carnegie, Pa., this summer, and will be in operation late in the fall. The board of directors consists of John H. Scott, W. H. Skivington, H. E. Nichols, T. B. Everson and Reid T. Vincent. Mr. Vincent is also president. An application for a charter will be made this week.

The Buffalo Union Furnace Co., Buffalo, has closed both furnaces down owing to a strike among the men at Furnace B employed in the company's stock house. The men demanded more help, which the management considered unnecessary. The other employes were incited to take a hand in the trouble and the result was a shut-down. Then the men at the other furnace went out in sympathy and the management decided to blow it out. Furnace B is banked. The men were recently advanced from $1.90 to $2; the Mahoning and Shenango Valley basis, but are now demanding $2.25, or the wages paid when iron was $24 a ton.

FIG. 5.—THE SHOP LIBRARY.

The Evans Mfg. Co., Ltd., of Butler, Pa., recently shipped to a Pittsburg firm after thorough test, a 50-h. p. Evans gas engine of the four-cycle type. Operating at full capacity the gas consumption of the engine proves to be about 5,000 feet in 10 hours. Another 50-h. p. engine is to be shipped this week, and the company is at work on engines of from 10 to 100-h. p.

Harry Rolfe of the International Correspondence Schools, Scranton, Pa., has accepted a position in the mechanical engineering department of the Westinghouse Electric & Mfg. Co., Pittsburg.

Mrs. Lucy Ann Warner, widow of Stephen C. Warner, and mother of Randolph S. Warner, president of the Republic Iron & Steel Co., died Sunday, May 5, from a stroke of apoplexy, at Painesville, O., aged 80 years.

A COMPARISON OF AMERICAN AND BRITISH ROLLING MILL PRACTICE.*

BY WM. GARRETT.

[Concluded from last issue.]

Before touching directly on your merchant bar practice, both iron and steel, I will give you my opinion as to the principal cause of your falling behind. It is simply because, up to the present time, you have had no competition, and my remarks following will prove this. Look back at your record for the past ten years, as regards the manufacture of iron and steel. True, there has been a slight and steady increase—in fact, you have not fallen behind your own achievements, but have failed only to keep up with the achievements of others. How many new iron and steel plants have been started in Great Britain since the year 1890? Few of importance, if any. How many millions of money have you spent during that time on improvements? I may be wrong, but I will venture to make assertion that during the past ten years all of the British iron and steel manufacturers did not spend as much money on improvements as the Carnegie Steel Co. did in two years. And why not? Has your right hand lost its cunning? Are your ingenuity and energy exhausted—you who were at one time the greatest manufacturers of iron and steel in the world? I cannot believe it. It has been simply because you did not have to—could do well enough without.

Who gave to the world the Bessemer, the Gilchrist, and the Siemens processes? Great Britain. Who taught us how to make bar iron, wire rods, hoops, etc.? The British. Who gave us the continuous mill? Bedson, an Englishman. Who gave us what is known as the Garrett system of making wire rods? Great Britain and Belgium. Who gave us the best type of heating furnace for heating steel billets which is now almost universally used in the United States, and is almost a curiosity in Great Britain? Allen, an Englishman. Who gave us the idea of a successful reversing mill? Ramsbottom, an Englishman. I might go on indefinitely. Yet, having been given all these, we Americans have improved on them to such an extent that they can scarcely be recognized, and are today using them as a means to compete with you in the markets of the world. In the meantime, judging from some of your antiquated mills and methods, one would be led to believe that about forty years ago a Joshua once more commanded the sun of progress to stand still, and it has stood still ever since.

And yet, when it was suggested to the management of some of these plants that by the introduction of some American methods a great saving in money could be made, the reply has been: "Why should I? I made over 30 per cent on my capital invested last year, and am satisfied with that." And at the same time they are rolling by hand ¾ inch round bars in about 16-ft. lengths, making about 10 tons per turn, had one engine—which appeared to have been designed by Watt himself—driving four or five mills all as old as the hills, eight or ten shears, and I don't know what besides. Can any one admit there is a competition in a country where such conditions exist? To be able to pay dividends in this enlightened age under such conditions is a libel on progress, science, invention and ingenuity, and is an imposition and a grievous and unnecessary tax on the consumer.

I may say here that all of your iron merchants mills are not like that, but this is no fancy sketch, and not the only mill of this type in Great Britain. While you have some first class mills for making iron, the main fact that I wish to convey at the present time is that having rolling mills of this type paying dividends means that you have had little or no competition. One of the best guide mills in the States for rolling iron is what is called the Williams mill, located at Youngstown, O. This mill consists of a 16-inch roughing train and a five-stand 10-inch train, and on it is rolled a box pile 5 inches wide and 6 inches high, containing over 60 per cent scrap and less than 40 per cent top, bottom and sides. This is rolled into ¾-inch rounds in 100-ft. lengths, and they make from 40 to 50 tons per turn. As I understood it, you have very few mills of this type in Great Britain; in fact, even in the United States this Belgian mill is not so popular as one might expect from its merit of being able to take a large pile and roll it on a slow speed train when the pile is short and "dumpy" and when the bar is long, finish the same on a train having a faster speed, which are the main features of the Belgian train.

*Read before the Iron and Steel Institute, London, Eng., May 8, 1901.

Merchant Steel Mills.

As far as I can see, you have not up to the present time taken steps in this country in the direction of building mills specially adapted for rolling merchant steel. In the United States during the past two years great attention has been paid to this. First of all it was found that the Allen type of furnace could be used for heating steel billets, whereas it was entirely unsuited for the purpose of heating an iron pile. The adoption of this type of furnace has reduced the cost of heating over 75 per cent in labor alone, and it has been proved that economy in fuel is equal to the Siemens heating furnace. One of these furnaces can heat 135 tons of 4-inch billets in a single turn, and if the Laughlin patented arrangements for dropping the billets out of the furnace on to the conveyor is adopted in connection with it, only one heater, two helpers, and a man to push the billets into the furnace are required to operate two furnaces, which have averaged over 200 tons per turn for a whole month—the total cost per ton for labor being about 12c. or about 6d. in English money.

As this is the maximum output on rod mills, it is but fair to state that when using the furnace for merchant mill purposes, where the output is less, this cost may be increased to 18c. or 9d. per ton. Without the Laughlin "dropping out" arrangement this cost is about 25 per cent more. When we realize that this type of furnace is of English origin, and that any you may have in this country are looked upon as a curiosity, this is something to be greatly wondered at. This is one of the main agents in connection with the cheap production of wire rods and merchant steel.

Next, we have continuous trains to do away with the hard roughing down. A 4-inch billet is rolled into, say, ¾-inch round, with but four men around the entire mill, doing all the work necessary to deliver it on to the hot bed. This includes one man to look after the continuous train. Merchant mills of this type, starting with a 4-inch billet, have produced as high as 445 gross tons of 1⅛-inch finished square bars in 24 hours, and have produced over 8,000 tons in a single month. The sizes rolled on these mills are from 3-inch to 1-inch wire flats, any thickness, and from 1¾-inch to ½-inch rounds and squares, and of course are best adapted for the middle range of sizes, as per the above.

On another type of mill for making merchant steel they start with a billet 30 ft. long on all occasions, and vary the size to suit the size of the finished bar. This billet ranges from 1½ inches to 3 inches square and in some cases the bars are finished about 300 ft. long. Too much credit cannot be bestowed upon the Morgan Construction Co. of Worcester, Mass. (and by the way Mr. Edwards, a Welshman, or a direct descendant of that nationality, is the leading genius of that company), for the fine point of perfection to which these mills have been brought. Their hot-bed arrangement is a work of marvelous ingenuity. While 165 tons of a 2½-inch x ½-inch is the best record I know of, the mill has a still greater capacity.

As to the merits and demerits of starting with a billet, say under 4 inches square, will say that whereas, outside of the fact that the capacity of the mill is controlled by the capacity of the furnace as only one can be used, a 4-inch billet is sold in the open market in the United States for $1 per ton less than the smaller size billet, and the total tonnage labor to roll a 4-inch billet into a finished bar is less than $1. And as it does not take more fuel to heat the same than is required to heat a smaller billet, it seems to me that merchant steel rolled from a 4-inch billet is delivered on the hot bed, so far as tonnage labor is concerned, at the same cost as the 1½-inch or smaller billet is delivered at the heating furnace. On mills of this type a merchant bar can be finished and placed on cars for less than 14s. per ton above the cost of the billet. This includes loss, fuel for power and heating, and the cost of everything required to produce the bar. And when we come to the

time when pig iron shall be sold for $9 per ton again in the United States (which is equal to 37s. 6d., and 4-inch billets for $14 (equal to about 58s.); add to this 14s. per ton for cost of conversion of merchant bars, and you have 72s. per ton as the net cost. Then not only Great Britain, but also Europe will have what is called competition.

As you have so far made no effort in this country in the direction of putting in mills specially adapted to roll steel, I have nothing from which to draw a comparison except your present mills for rolling iron bars, on which you roll steel also, but I will say here it is impossible to get up a mill having the same advantages as the American mill I have described, to roll both iron and steel.

Hoop Mills.

If I were to be asked what I consider the finest rolling mill machinery in the world, I would without the least hesitation say the continuous hoop mill at Youngstown, O., designed and built by the Morgan Construction Co., of Worcester, Mass. On this mill results are obtained which have been thought impossible; for nicety of adjustment and precision of relative speeds, it is, in my opinion, the finest display of ingenuity in this line. This mill also has derived its main wonderful features, such as flying shears and coiling machine, from a Welsh engineer, Mr. Edwards. Fancy a 1½-inch billet 30 feet long and weighing 225 lbs. entering the first set of a continuous train and coming out of the last set ⅞-inch wire by No. 20 gauge. After the hoop comes from the rolls, it is laid by a folding process on a slow moving table, and the only one to touch the hoop with a pair of tongs, is a boy, who picks up the first end and introduces it into the reel which coils the hoop up as neatly as a ribbon. The hoop is afterwards cut automatically in the required lengths for cotton ties. The output of this mill is about 45 gross tons of ⅞-inchxNo. 20 gauge hoops, single turn.

It is impossible to describe this remarkable rolling mill machine. However, mainly owing to the impossibility of obtaining a uniform size throughout the entire hoop when finished, this mill has not met with the favor one would expect. For cotton ties or hoops which do not require to be of an exact gauge throughout, it may be all right. Be this as it may, the fact is, the American Steel Hoop Co. or their predecessors, have built two hoop mills since this continuous hoop mill was built, and neither of them are of the continuous type throughout. The most popular type of hoop mills are those having a continuous roughing and looping finishing train of four sets of rolls, on which it is a common thing to make 45 tons in a single turn of 1¾ inch and 1½ inch by 18 or 19 gauge, or about 30 tons per turn of ⅞-inchx20-gauge cotton ties. How much better these results are than those obtained in Great Britain, I will leave you to judge. From what I understand and have seen, you still have the old-style hoop mills of 10 or 15 years ago; and where your practice is most lacking is in the means to take care of the hoop as it comes from the last set of rolls. It is no trick, on a first-class hoop mill in the States, to roll 1½-inch No. 19 gauge in 200-ft. lengths and the piece will run out the entire length without being touched. Then, again, you roll iron and steel hoops on the same mill, which prevents the adoption of certain improvements—in particular in connection with the heating of billets.

Mills for Rolling Strips for Tubes and Skelp.

The finest mill we have in the United States for strips is a three-high universal mill built by the Garrison Foundry Co. of Pittsburg, Pa., for the Lukens Steel Co. on which mill they roll from 10 inches to 36 inches in width. They have but one set of rolls three-high. I understand this mill is giving very good results, but the manufacture of this class of material, strange to say, has not been developed to any extent, even in the United States. One reason for this is that it is but lately that the consumer has become reconciled to the use of steel pipe, the material for which alone will permit of any extensive and marked improvement in the method of manufacture. However, with what we have, our practice is far ahead of yours in this country. On an ordinary 10-inch train, over 60 tons of 4¾-inchx10-inch strips have been produced in a single turn, and between 60 and 70 tons of from 6-inch to 10-inch strips per turn is a common thing on a 16-inch mill. This refers to steel strips. I understand that in Great Britain you pay double the price for rolling strips you do for bar iron, whereas in the United States we pay less than for rolling bar iron. Special rates are allowed the manufacturer by the Amalgamated Association, to pay men rolling strips. This is no doubt owing to the fact that at one time nothing but cut nails were used in this country, of which over 6,000,000 kegs were made in a year, calling for over 300,000 tons of 12-inch to 14-inch strips. This made the rolling of strips so familiar and common, and competition became so keen between the cut and wire nail that reduction after reduction took place, which was naturally felt by the strip and skelp makers, and most of those nail plate mills, as they were called, are rolling strips today. As the methods of rolling strips are about the same in both countries, I will close the subject by making the prediction that within the next five years more improvements will be made in the direction of improving the present method of making strips than in connection with any other process in the steel business, as the demand for the same is growing greater every day, and a production from 250 to 300 tons of strips per turn, varying from 10 to 22 inches wide, will be a common occurrence.

Wire Rod Mills.

I touch upon the subject of wire rod mill practice last of all, because the striking developments and results by the American rod mills speak for themselves. I will not take up your time with this at present, but will refer you to an article published in the *Iron Age*, issue of Feb. 22, 1901, to another article on the history of the 4-inch billet, published in the *Iron and Coal Trades Review*, and *The Iron Trade Review*, issue of March 8, 1901, and to the address of Chas. H. Morgan, before the 1900 meeting of the Society of Mechanical Engineers, which gives the Morgan Construction Co. due credit in a very modest way, for all they have done to improve the rolling mill practice. I will merely add that there are two well-defined types of wire rod mill in use in the United States, viz., the straight continuous and the improved Belgian types, the latter commonly called the "Garrett" mill. Judging the popularity of both these types of wire rod mill from the number of each in use, the continuous mill would cut very little figure were it not for the mills of this type in operation at the works of the Washburn & Moen Co. (now belonging to the American Steel & Wire Co.) at Worcester, Mass., and at Waukegan, Ill., which of late has been perfected by Mr. F. H. Daniels, chief engineer of the American Steel & Wire Co., to such an extent as to become quite a formidable rival to the looping type. Indeed, it is only justice to say that Mr. Daniels is the only one who ever designed and constructed a continuous wire rod mill that could successfully roll more than one rod at the same time; and his late effort in the wire rod mill at Waukegan, Ill., is a masterpiece in that line. This mill starts with a 4-inch billet, and the output of that is nearly equal to that of the best looping mills—about 350 tons to the double turn, whereas the Morgan continuous mills, starting with a 1¾-inch billet, produce about 150 tons per double turn.

I will now speak of the rod mills of Great Britain. I understand that at Middlesborough you have a straight, continuous rod mill which has been in operation for some time, and for some reason or other, recently another mill was put in, but it was of the Belgian type. Messrs. Richard Johnson & Nephew of Manchester have a rod mill partly of the continuous and partly of the looping systems. They, through Bedson, were the pioneers of the continuous mill, but have changed from the straight continuous mill to part Belgian. The roughing train is continuous and has vertical rolls in all cases, to reduce the ovals to a square. This is the finest mill of its kind in the world, and the manner in which these vertical rolls are driven shows remarkable engineering skill. But why have vertical rolls, which prevent you from rolling more than one bar at a time, when the "twist" guide will do the work just as well, and you could have all of your rolls horizontal? You have a four-high mill at Warrington which is much more complicated than a good Belgian mill. On this mill the bar, when it is square in cross section, is carried by means of what we might term a split pipe from the top two-high set to the bottom two-high set—the latter set being speeded up in proportion to the reduction. As this is accom-

plished by a curved guide on all Belgian trains, saves the same labor and has no complication, and the output of some of the Belgian mills in Germany exceeds this mill, then again this seems a case of "much ado about nothing."

Then you have some of the very oldest types of rod mills in Europe, and to show how far you are behind in output at least, I will make the assertion that the four best rod mills in Great Britain, during the month of January, did not produce as many rods as one of the wire rod mills in the United States, which in that month produced 10,230 gross tons of No. 5 rods. Indeed, I might make it five of your best mills and be safe. Here we have five different concerns—five mills, five crews of men, five rollers (skilled men), five heaters (skilled men), paying the rollers say 25s. per day each or £6 5s. and the heaters 15s. per day each or 75s, making a total of £10 for each turn's work, instead of one roller £2 10s. and one heater 25s, or £3 15s., or over 75 per cent less, not to speak of the balance of the men. And I wish it to be understood that, in my opinion, the best men around the rod mills I ever saw are those who work on your present mills in England; so it is not the fault of the men.

The question might be asked: "If each of these five rod mill owners had a rod mill of that capacity, what would they do with such a proportion of rods?" This I do not know, but if the present method of making rods is persisted in, the time will soon come when you will not make any rods, as there is already quite a surplus of rods in the United States, and when your steel makers find some means of giving you a cheaper 2-inch billet, to meet which price the American steel makers may not find it to their advantage, then they will deliver wire rods to England at a figure less than you are now paying for 2-inch billets.

Is there no remedy, and will Great Britain give up the wire business—she who was the mother of that business and has taught the world how to make wire? I think not, and I believe there is a remedy which will eventually be adopted. Supposing the five largest users of wire rods in Great Britain were to combine and erect a large first-class rod mill, but keep their business just as it is, and each party took stock in the new rod mill deal in proportion to the amount of rods they would use. They would treat this new enterprise as an entirely new organization from their present wire drawing plants, and locate the new plant not far from a shipping port on either the East or West Coast. Then let us see how they would stand with a view to securing their raw material in the shape of billets.

So far as their supply from Great Britain is concerned, conditions would be the same as today, but they could not only get their billets from the Pittsburg district, as they are doing at the present time, but could also draw their supply from the Tennessee Coal & Iron Railroad Co., of Birmingham, Ala., who are located but a short distance from the seaboard: from the Maryland Steel Co., of Sparrows Point, Maryland, and from the Dominion Iron & Steel Co., whose plant is located at Sydney, N. S., or 1,000 miles nearer Liverpool than New York is. No better source for a supply of billets could be had. When keen competition comes, the Dominion Iron & Steel Co., who can make the cheapest pig iron in the world, will always be able to make steel billets at a low cost. This same scheme can be applied to all who now make rivets, bolts, etc., or those who make tubes or pipe, getting soft steel billets to make their strips. In fact, if your raw material, such as ore and coal, is becoming scarce, and you can find a better market for your coal, selling it for steam purposes, than to manufacturers of pig iron and steel, who during times of competition must have cheap coal, I can see no better scheme. For why import ore which has 50 per cent of foreign matter when you can import billets on which there is but from 5 to 6 per cent loss from the billet to the wire rod, merchant or steel strip. This same rule can be applied to those who use strips or tubes. And not only that, but if the British iron and steel makers do not follow the footsteps of their American cousins and combine, and then only manufacture their respective material at the most advantageous points of shipment, and use the most economical method in manufacturing, the manufacture of iron and steel in time will become a lost art in Great Britain.

HAS HANDLED MILLIONS OF STEEL CREDITS.

Albert C. Case, who has retired as manager of the credit department of the Carnegie Steel Co., to succeed John E. Searles as president of the American Cotton Co., is one of the most successful men identified with the credit branch of any American business concern. A native of Huntington County, N. J., his father died when he was but four years of age and before he reached his teens, he found it necessary to earn his own livelihood. At seventeen he had perfected himself in the Morse register telegraph system, which enabled him to secure a position on the New York division of the Pennsylvania Railroad as a telegrapher. He was advanced from one post to another, and when he quit the Pennsylvania service held the position of dispatcher.

He was appointed, May 1, 1886, to the office of auditor and cashier of the Baltimore & Ohio Telegraph Co. in New York City. After three years with that company, or until it was absorbed by the Western Union, the Lehigh Valley Railroad Co. made him passenger agent for New York, which office he filled until Bradstreet's Mercantile Agency engaged him to revise its Atlanta, Ga., district branch. Returning to New York in a year, he was assigned to Pittsburg as superintendent of Bradstreet's Pittsburg office. His administration of the Pittsburg agency soon attracted the interest of the

ALBERT C. CASE.

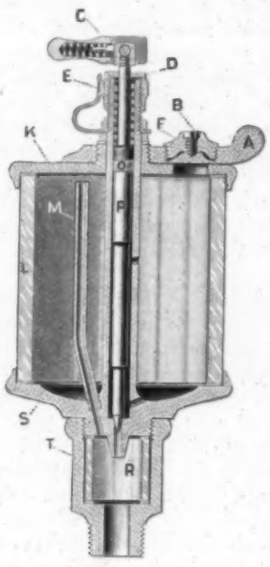
Carnegie company officials, and the office of manager of the credit department of their business was tendered Mr. Case in 1896. Later he was admitted to the Carnegie partnership.

During Mr. Case's connection with the Carnegie company, he has passed on probably the largest amount of credits reviewed by one man for any concern in the world, and although the business transacted by the company during the five years of his service has aggregated hundreds of millions, the losses from bad debts have been infinitesimal, amounting to only 9-1000 of 1 per cent.

The business to which Mr. Case will devote his future is not entirely unfamiliar to him as he gained considerable knowledge of the cotton industry while representing Bradstreet's in the South. Through his connection with the Carnegie company and as trustee of the Metropolitan Trust Co., of New York, Mr. Case is generally known to New York financiers. He was one of the four Carnegie guests at the dinner given by J. Edward Simmons, president of the Fourth National Bank, of New York, in honor of President Charles M. Schwab of the Carnegie company, at which the leading bankers and railroad owners of New York were assembled at the University Club last December, the other Carnegie guests being Mr. Carnegie and Hon. James H. Reed. It was at that gathering that the plan of creating the United States Steel Corporation may be said to have originated, the incipient cause being the address of Mr. Schwab, reviewing the achievements in American steel manufacture and the prophecy of its future which he made.

PARAGON SIGHT-FEED LUBRICATOR.

A gas engine lubricator of compact construction and calculated to obviate some of the difficulties encountered in this class of lubrication, has been designed by the Lunkenheimer Co., of Cincinnati, and is known as the Paragon. The filling arrangement, which is shown in the sectional illustration below, consists of a screw-down slide filler. The slide A screws down on and around the lid of the cup and has a loose plug which covers the filling hole when the slide is swung over to a closed position. This loose plug is so arranged that the wear can be adjusted by turning down the screw B. The whole construction is very heavy, and the slide can be depended upon to seat perfectly and remain tight for an indefinite period. On account of this construction it is possible to secure a large filling hole.



PARAGON SIGHT-FEED LUBRICATOR.

The feed regulating mechanism is the same as in the manufacturers' "Sentinel" pattern oil cup, and the feed can be put on or off by raising or lowering the cam lever C. The rate of feed can be adjusted by turning the nut D, which is prevented from loosening by the spring E. By this arrangement the feed can be set and turned on or off without disturbing the rate of flow. The cup is well packed both around the stem and at the top and bottom of body and sight-feed glasses and can not become leaky. The cup is secured together by a patented lock-nut construction, which makes it impossible for the cup to jar apart from the shaking of the engine, and also prevents leaks. The sight-feed glass R is quite large and can be readily cleaned by unscrewing the upper part of the cup from the base piece. These cups are in six sizes. Where a heavier cup is required the "Mars" pattern is used.

Owing to the decision of the United States Steel Corporation to concentrate all operating departments of the constituent plants at Pittsburg, Charles M. Jarvis, vice-president of the American Bridge Co., in charge of the operating department, has resigned, as Mr. Jarvis does not care to change his residence from New England.

The American Tin Plate Co., through W. C. Cronemeyer, agent, 1211 Carnegie Bldg., Pittsburg, has published "Under an MF Roof," an illustrated pamphlet with cover printed and stamped out to represent a tin-roofed house. The history of the MF terne plates for roofing is given and an illustration is given of a roof laid with it 52 years ago that is still giving good protection. It is stated that 90 per cent of the demand in this country for roofing tin is supplied by the American Tin Plate Co. Directions are given in detail as to the construction of tin roofs.

OUTPUT OF BLAST FURNACES OF UNITED STATES.*

May 1, 1901.

Location of Furnaces.	Coke and Anthracite.					Charcoal.				
	Total No. of Stacks.	In Blast.		Out of Blast.		Total No. of Stacks.	In Blast.		Out of Blast.	
		Number.	Weekly capacity.	Number.	Weekly capacity.		Number.	Weekly capacity.	Number.	Weekly capacity.
New York	14	3	3532	11	6057	2	2	150	0	0
New Jersey	8	3	2070	5	2690	.....	.....	.....	.....	.....
Spiegel	3	3	600	0	0	.....	.....	.....	.....	.....
Pennsylvania:						13	2	74	11	500
Lehigh Valley	29	16	10130	13	4795	.....	.....	.....	.....	.....
Spiegel	1	1	125	0	0	.....	.....	.....	.....	.....
Schuylkill Val.	14	9	7078	5	2075	.....	.....	.....	.....	.....
Upper Susqu. Val.	4	1	1224	3	2736	.....	.....	.....	.....	.....
Lower Susqu. Val	10	5	4977	5	1986	.....	.....	.....	.....	.....
Spiegel	0	0	0	0	0	.....	.....	.....	.....	.....
Lebanon Valley	13	12	9887	1	600	.....	.....	.....	.....	.....
Pittsburgh Dis't	32	27	67555	5	8975	.....	.....	.....	.....	.....
Spiegel	1	1	2801	0	0	.....	.....	.....	.....	.....
Shenango Valley	15	12	17419	3	2429	.....	.....	.....	.....	.....
West'n Pennsylvania	20	13	19102	7	2238	.....	.....	.....	.....	.....
Spiegel	1	1	761	0	0	.....	.....	.....	.....	.....
Maryland	5	4	6350	1	1200	4	1	131	3	330
Wheeling District	8	8	10664	0	0	.....	.....	.....	.....	.....
Ohio:						9	3	229	6	377
Mahoning Valley	15	15	29061	0	0	.....	.....	.....	.....	.....
Central & Northern	14	13	24942	1	882	.....	.....	.....	.....	.....
Hocking Valley	3	2	607	1	400	.....	.....	.....	.....	.....
Hanging Rock	13	9	5069	4	1385	.....	.....	.....	.....	.....
Illinois	15	15	31203	0	0	.....	.....	.....	.....	.....
Spiegel	1	1	860	0	0	.....	.....	.....	.....	.....
Minnesota	1	0	0	1	763	.....	.....	.....	.....	.....
Wisconsin	5	4	3929	1	574	.....	.....	.....	.....	.....
Missouri	1	0	0	1	570	.....	.....	.....	.....	.....
Colorado	2	2	3043	0	0	.....	.....	.....	.....	.....
Virginia	21	14	8505	7	3359	3	0	0	3	190
Kentucky	5	3	919	2	1370	3	0	0	3	200
Alabama	38	27	25176	11	6300	3	2	741	1	274
Mich., Mo. and Wis.	.....	.....	.....	.....	.....	13	7	4358	6	1947
Tennessee	14	9	6326	5	2827	4	1	419	3	300
Georgia	1	0	0	1	450	4	2	821	2	333
North Carolina	2	0	0	2	437	.....	.....	.....	.....	.....
New England	.....	.....	.....	.....	.....	7	3	287	4	360
Texas	.....	.....	.....	.....	.....	4	0	0	4	901
Utah	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Oregon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Totals	328	233	293915	95	55008	69	23	7310	46	5772

SUMMARY.

Fuel.	In Blast.						Out of Blast.			
	Number.			Weekly Capacity.			Number.		Weekly Capacity.	
		Month Previous.	Year Previous.		Month Previous.	Year Previous.		Month Previous.		Month Previous.
Charcoal	23	25	25	7,210	7,910	6,894	46	42	5,772	5,027
Coke and Anthracite	233	225	267	293,915	288,766	286,956	95	103	55,008	68,006
Total	256	250	292	301,125	296,676	293,850	141	145	60,780	73,033

*Condensed from the *Iron Age*. The decrease of unsold stocks, so far as these are reported (none of the stocks of the steel companies being included), was from 476,875 tons April 1, to 442,596 tons May 1, or about 34,000 tons.

The La Belle Iron Co., of Wheeling, is having plans made for the blooming mill of its Steubenville, O., plant. This mill is to roll ingots of the unusual dimensions of 18x42 inches. S. V. Huber & Co. of Pittsburg are the engineers.

On the recommendation of the Franklin Institute, the silver medal and diploma was awarded by the National Export Exposition to the International Correspondence Schools, Scranton, Pa., for a unique and comprehensive system of technical education by correspondence.

The Ironsides Co. of Columbus, O., reports that the business of the fiscal year just closed, shows a gratifying increase. The company manufactures and supplies special lubricants for the preservation and protection of metallic surfaces, wire ropes, gearing, belting, fibre ropes, etc. Its market includes the largest rolling mills, general manufactories, mining and other industries. Late improvements and extensions of the company's factory provide for a further increase of 100 per cent in its business the coming year.

Work was commenced last week on the new six-mill tin plate plant to be erected at Washington, Pa., by the W. H. Griffiths Co. The plant will be completed in about six months.

President Schwab Before the Industrial Commission.

WASHINGTON, May 13.—President Charles M. Schwab, of the United States Steel Corporation, appeared before the Industrial Commission on Saturday and for two hours and a half answered questions, sometimes satisfactorily, many times without giving the information the inquiry was designed to bring out. Those who have regarded Mr. Schwab's attitude toward consolidations with large capital, with bonds and preferred and common stocks, in much the same light as Mr. Carnegie's, will find in his conversation with members of the commission—it will scarcely be called testimony—evidence that he is now a thorough believer in the new form of industrial organization. That much might have been known beforehand, however, from Mr. Schwab's article in the May *North American Review* symposium.

Mr. Schwab gave a revelation to some of his interrogators—but no surprise to those present who have been at all acquainted with his rapid rise—of his ready grasp of economic questions and his facility in thought and expression. The armor plate inquiry of a few years ago demonstrated that Mr. Schwab was not only a master of steel-making and of administration, but a man of rare readiness in argument and retort, nimble in mental operations and of exceptional command of the king's English for one who had not "learned letters" in the schools.

Summing up Saturday's hearing, Mr. Schwab told the commission little that the public does not know about the United States Steel Corporation. The members, and particularly Prof. Jenks and Prof. Ripley, who are the economic experts employed by the commission, tried to find out some things relating to the basis on which the Carnegie holdings were acquired and the profits of the syndicate, but nothing came of the questions but a pleasant retort, or a laugh, or an intimation that the matter was not one on which the public should be taken into confidence.

Illustrating this phase of his talk is Mr. Schwab's answer to Prof. Jenks's attempt to get some information on the arrangement made by the Morgan syndicate. "That is a private matter, and I am not authorized to speak about it here. Still, I shall ask about this when I have time, after I return to my office in New York, and if there is no objection to my discussing this matter for the edification of the public, I will submit a statement concerning it to the commission." When asked if J. Pierpont Morgan's recent purchase of an English line of steamers meant the growth of the agitation for ship subsidy legislation in this country, Mr. Schwab laughed, as did the commissioners, and he said he did not know—they should ask Mr. Morgan about that.

The Carnegie Consolidation.

In reply to questions, Mr. Schwab said he had been president of the Carnegie company for the past five years. Describing the operations of that company he said it had mined all ore required for its purposes, amounting to about 6,000,000 tons a year; had maintained a fleet of boats on the lakes to transport it from the mines in the Northwest, and owned a railroad 156 miles long to carry the ore from the lakes to Pittsburg. The company manufactured a great variety of iron and steel articles, including rails, billets and armor.

"I mention armor," remarked the witness, with a smile, "because it is so well known."

The Carnegie manufactures embrace about 50 per cent of the structural, about 30 per cent of the rails and about half of the armor output of the whole country. Proceeding, he related how the 26 subsidiary companies under control of the Carnegie Co. had been taken in under the parent company.

"The consolidation was effected in order to bring about greater harmony. Mr. Carnegie's idea was that a partner conducting the coke business, for instance, should be more in touch with one managing the shipping business. He retained control of all. The stock was placed at $1,000 a share and was never listed, and it may interest you to know that there was only one sale of the stock, and that was of ten shares to close a partnership."

Advantages of One Big Combination.

Coming down to the formation of the United States Steel Corporation, Mr. Schwab said it was different from the Carnegie Co., in that it had taken in numerous plants devoted to different purposes, such as tubes, wire, tin plate, etc. It had never before been the rule to consolidate such divergent interests. Asked by Prof. Jenks to indicate what advantages he thought would accrue from such consolidation, Mr. Schwab said they were many and great. "To start with," he said, "there is the one which is the basis of all iron and steel manufacture. The United States Steel Corporation now controls by ownership 80 per cent of all the known ore in the Northwest. These mines were formerly owned by separate interests and the ore of one company frequently was traded for that of another, because it was not applicable to its owner's purposes. The ore question has been always a complicated one, but it is clearing now, because by consolidation of interests we can get the very best mixtures of ore by which to most economically manufacture iron.

"In the matter of shipping the ore another great advantage will be gained. Formerly when contracts for carrying ore had to be made, in addition to the vessels owned by the Carnegie and other companies, there were frequently delays that were expensive. We now own a fleet of 112 or 115 vessels, and the first to reach a dock will be first loaded and then its destination will be determined. Formerly a certain boat had to wait for a certain ore, and carry it to a certain destination. Now, the boats stand in turn, and do whatever comes to hand."

Mr. Schwab emphasized the point that the field could now be so divided as to cut the item of transportation down to the minimum by the concentration at one point of all the business for which a plant is especially adapted. That is to say, if experience shows that a plant in Illinois, for example, makes a better quality of steel rails than a plant in Pennsylvania, the Illinois plant will make steel rails wholly. There would be a large saving in the cost of superintendence and direction. For instance, certain skilled men were needed at furnaces whether there were two in a plant, or 50, and each subsidiary company formerly had to have a skilled chemist and other specialists. Under the new order of things a single specialist in each line would suffice for all the works. This would simplify and cheapen production. Then again the same methods and the best would be followed at all works.

There would be saving, too, in offices. Where each big company formerly maintained a separate office in New York with directors, leased wires, telephone service and all that, it would be possible to have one central office building. It was the intention also to have each president of each company to surround himself with his practical assistants instead of directors. The number of directors in the constituent companies had been reduced and a very considerable saving made in directorate expenses.

"Do you know of any disadvantages that will result from consolidation," he was asked. "None," replied Mr. Schwab, after a moment's reflection. "There are none that I know of which I can speak definitely."

It was the intention to make the United States Steel Corporation virtually a great clearing house for its subsidiary companies. Each of the latter would have a directorate that would control its particular business. The parent company would, of course, place such men as it deemed proper on such directorates, but the directors would have absolute control, in case the directors did not conduct affairs to suit the parent company.

"What would be the result?" inquired Mr. Farquhar.

"At the end of the year new directors would probably be elected," returned Mr. Schwab, with a smile.

Iron Ore and Coal Reserves Undervalued.

On the question of the capitalization of the United States Steel Corporation Mr. Schwab's statements probably surprised his questioners. He declared that the capitalization was not too high. "On the contrary," said he, "my contention from the first has been that in one important sense it is much too low. By this I mean that if I had my way in listing the assets of the United States Steel Corporation I would put a much higher valuation upon our ore deposits than has been done. Why, in the Northwest alone we own ore deposits that will yield 500,000,000 tons. At an average profit of $2.50

a ton this means an actual property asset of stupendous value. Even at the present rate of production and consumption we will exhaust these deposits in 60 years. And then where are we going to get other ore like it? In this field, which is the largest in the world, we own 80 per cent of the ore deposits. The virtual exhaustion of the ore deposits is now the great cause of weakness and foredoomed distress in the British steel manufacture. Five years ago, in an address to the British Steel Association, I warned the manufacturers of England on this point. Now they are turning to Spain and other uncertain fields for their ore.

"In coal, too, that is such an important factor, we have a decided advantage over England. We own 60,000 acres of Connellsville coal, all there is in the world, and the best in the world for the manufacture of steel, and at our present rate of consumption all of this kind of coal will be exhausted in 30 years."

"I can conceive that there is a point in capitalization which, if pursued, will make it impossible to find administrative ability capable of managing it, and the whole thing go to ruin. But I do not think we have reached that point in the steel business. I can see only good results coming from this combination—good for the investor and good for the laboring man."

Asked his opinion upon allowing ore to come in free, he said it virtually did so now.

"We now own mines enough to supply ourselves, but we have assumed contracts from elsewhere formerly made by constituent companies. I think it is entirely fair to put a liberal price on ore. Geologists have established the fact that there is only a certain amount of ore in this country. The English are suffering now because they did not husband their raw material. They are now getting ore from Spain, and even from this country. We know the value of ore, and that it is not going to last many more years, so I am constantly asking our people to realize the necessity of putting the right valuation on ore. Free ore would have no effect on American consumers."

Lower Prices on Steel Exports.

In reply to a question as to what effect consolidation would have on prices Mr. Schwab said: "I think the tendency will be toward somewhat lower prices. I do not think there is a probability of higher prices unless something unforseen happens." Continuing, he said prices of steel and iron were fixed by the law of supply and demand. Regarding the lower prices charged on exported goods to those sold at home, Mr. Schwab said that exported goods were frequently sold at a loss in order to keep the foreign market and keep the mills going, as it was better to take the low prices than close down.

"Could you afford to sell all your goods in this country at export prices and pay prevailing wages?"

"No," was the emphatic reply. "Nothing like it."

"Is it true that all manufactured goods sell cheaper abroad than they do at home?"

"I think that is true."

"Do European manufacturers follow the same course in selling to us?"

"Most undoubtedly."

The Steel Corporation and the Tariff.

When Mr. Schwab's attention was called to the fact that at the last session of Congress Representative Babcock introduced a bill to abolish the tariff on steel and iron, because of the formation of the United States Steel Corporation, he laughed. "That wouldn't do anybody any good," he said. "Reduce the tariff and the wages of labor employed in making highly finished products will likewise have to be reduced. His company could stand a reduced tariff, or no tariff at all, much better than labor could stand it. In point of fact, those classes of steel and iron manufactures in which the cost of labor is not a heavy item, such as billets and rails, could get along now without any tariff. The only difference would be that some foreign rails might be shipped by water to the Pacific coast more cheaply than American manufacturers could send them by rail. But in the finer products, such as wire, where the cost of labor was the heaviest item of production, the present tariff was necessary in order to give labor its adequate reward. Summarizing under this head, Mr. Schwab declared that home tariffs help some, but that foreign tariffs are what hurt the American manufacturers. "If only we could get into Germany and France duty free," he said, with a laugh, "the world's markets would be ours."

In reply to a question Mr. Schwab estimated that his company would produce 65 to 75 per cent of the steel products of the country, but did not think this preponderance gave it a monopoly.

Effect of Consolidation on Capital and Labor.

When asked if the consolidation would affect laboring men, and as to the position of the latter in the Carnegie company, Mr. Schwab stated that every superintendent in the latter company was individually interested in the profits of his department and received a percentage of them. "I hope," he added, "that results will prove that the same system will be found advantageous to the United States Steel Corporation." He was asked if he would furnish the commission with a copy of the constitution and by-laws of the company, and replied that he would gladly do so.

"And of the syndicate agreement?"

"I wouldn't like to promise that," said Mr. Schwab. "That is a private matter, and I cannot promise that at this time."

The question was asked how the consolidations would affect the chances of men for employment.

"Opportunities were never so great as they are now for men of brain and energy who are willing to work. There was never so great a scarcity of the special men who are required by manufactories. Men with exceptional abilities have chances equal to any such men ever had." Mr. Schwab replied to a question as to whether or not the opportunity for the man with small capital is as good now as it was before great consolidations were formed by saying:

"If small capital is all he has, my answer is no. But I do know that under the latter day system of consolidation the opportunity never was so good for men of energy and brains, no matter what their station or how humbly they start. The big concerns in this country today are on the sharp lookout for men who master particular lines of business, and who thus become specialists or experts. Responsible positions and high salaries await all such men in the employ of the United States Steel Corporation."

Carnegie Steel Co. and Labor Unions.

Mr. Schwab was then asked to give a comparative statement of his knowledge of wages past and present in steel and iron industries. "The average wages at the Carnegie Co.," he said, "have been greater each year since 1892 than they were in any year preceding 1892. There has been no aristocracy of labor at the Carnegie mills since 1892, under which some men were paid $100 and some men $1 a day.

"Up to 1892 labor organizations controlled the Carnegie works. Since then we have had no labor organizations in the works, although there are some on the docks. Since that time the lower-priced men have been given better wages and the higher-priced ones reduced. No man there gets $100 a day now, or half of it. Under the control of labor some men in the rolling mills got three or four times as much wages as other men doing the same kind of work in similar mills.

"The relative wages were in other ways unjustified. At Homestead once, for instance, the labor organizations not only selected the foremen but named those who were to succeed them in case of vacancies. The elimination of the system was not a question of wages but one of business."

Mr. Schwab paused a moment and then continued slowly: "As you perhaps know, I have been a workingman, but if I were a workingman today in one of the mills I would not belong to any labor organizations. Labor organizations put all men in the same class of work on the same level. If I was a bright, wide-awake, active, vigilant man I would under the rule of the labor organizations be put in the same class as the poorest equipped workman of the lot. Last year," he added, "at Homestead an average was struck of the daily sums received by all employes, including boys, excluding regularly salaried employes, every working day being counted, whether the men and boys worked or not, and the average received by each was $4."

"What was the minimum received?" he was asked.

"One dollar and fifty cents for the men—for the laborers," answered Mr. Schwab.

"What was the maximum?"

Mr. Schwab's reply convulsed commissioners and others alike.

"I was in Weber & Field's not long ago," he said, "and Fields was asked 'What would you do for $10,000?' His reply was: 'I am ashamed to tell.' So I'm ashamed to tell you what that maximum was, but it wasn't $100 a day, or half of it."

On the point of a reduction of the wage scale Mr. Schwab came out strong and emphatic. He declared that every well managed and successful manufacturing enterprise had learned by experience that the only safe business course was to pay to labor every cent labor is worth. This was the fixed policy of the Carnegie companies, with which he had been connected so long, and would be the policy of the United States Steel Corporation, because that was the only safe business course. "Under the labor union system," declared Mr. Schwab, with passionate earnestness, "all members are reduced to a dead level of equality, and the wage scale largely is determined by the worth and capability of the cheapest workman, instead of the most capable and highest priced. This narrows opportunity, dulls ambition and gives no man a chance to rise."

Referring in conclusion to the export business in steel, Mr. Schwab said that a great disadvantage under which the American manufacturer labors, is in the lack of a merchant marine. It costs more to transport a ton of steel and iron from Pittsburg to Europe than it costs the owners in Pittsburg to produce it. Therefore some shipping subsidy policy is badly needed in this country.

R. C. Hallett, formerly connected with Julian L. Yale & Co., The Rookery, Chicago, has opened an office at 136 Liberty St., New York, where he will represent the Seamless Tube Co. and Brown Co.

Secretary J. D. Farasey, of the American Boiler Manufacturers' Association, announces that the next annual convention will be held at Buffalo, N. Y., August 12 to 17. The first two or three days of the week will be devoted to the business of the association, leaving the members free to visit the Pan-American Exposition in the balance of the week.

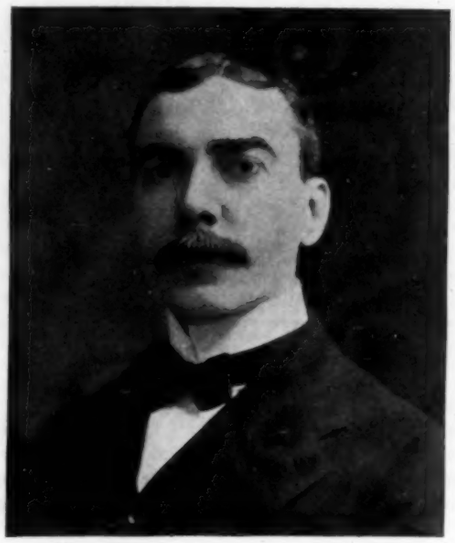
The Metallurgical Laboratory has been established at 545 Liberty Ave., Pittsburg, and G. P. Maury, together with his scientifically trained corps of assistants are prepared to make analyses, assays, etc., of iron, steel, coal, coke, etc. All kinds of mining properties will also be examined and reported upon. Manager Maury has had wide experience in this field of work. He was employed several years as a chemist in the laboratory of the Edgar Thomson Steel Works of the Carnegie Steel Co. at Braddock, Pa., and later had charge of the laboratories of the Oliver Iron Mining Co. on the Mesabi range in the Lake Superior ore regions. He was later employed at the laboratory of the American Steel & Wire Co. at Cleveland and after several years of service was transferred to the Edith furnace of the American Steel & Wire Co. at Pittsburg. He recently severed his connections with this company to assume charge of the Metallurgical Laboratory.

The locomotive consolidation, while now practically assured, according to President Wilson Miller of the Pittsburg Locomotive & Car Works, will not be formally organized until June. It will be known as the American Locomotive Co., and will have a capitalization of $50,000,000. It is expected to embrace seven plants: The Pittsburg Locomotive Works, the Manchester Locomotive Co. of Manchester, N. H.; the Rhode Island Locomotive Co. of Providence, R. I.; the Cook Locomotive Co. of Paterson, N. J.; the Schenectady Locomotive Works of Schenectady, N. Y.; the Brooks Locomotive Works of Dunkirk, N. Y., and the Richmond Locomotive Co. of Richmond, Va. The combined companies employ about 12,000 men. Henry Fisk & Sons, the New York bankers, are financing the combination. The Baldwins and the H. K. Porter Co. of Pittsburg, are not included in present plans.

WITH THE FRICK COKE CO. NEARLY 25 YEARS.

Giles B. Bosworth retired recently from the H. C. Frick Co. last week with a record for the longest continuous service of any employe or official identified with the company. Mr. Bosworth will give up business pursuits for some time, and will devote himself for a year or two to improving his health before again assuming any responsibilities. On April 30th he finished his twenty-third year and last day with the Frick Coke Co.

Mr. Bosworth was born in Pittsburg, 45 years ago. At the age of 14 he became a bread-winner, entering the employ of Piper & Shiffler at the Keystone Bridge Works in 1870, receiving $1 per day for threading bolts and tapping nuts. In June, 1871, he secured a position as clerk in the Allegheny Arsenal under Col. A. S. M. Morgan, U. S. military store-keeper. After two years in the government service, he secured through Col. Morgan his first position in the coke trade in 1873 as bookkeeper for Morgan & Co., the largest producers and shippers of coke in the Connellsville region at that time. The entire Connellsville region boasted of only 3,500 ovens then, and Frick & Co., who began business in 1871, possessed



GILES B. BOSWORTH.

only 300 acres of coal and operated 200 coke ovens. The panic of 1873 crippled the coke operators badly, and only a few firms including Frick & Co., survived. In 1876, a year before the business revival, Mr. Bosworth entered the employ of Mr. Frick at the Henry Clay Works, Broad Ford, Fayette County, as shipper. In six months he was transferred to the Pittsburg office and placed in charge of the accounts. In 1879, the coke industry experienced a remarkable boom, the price advancing from 90 cents to $5 per ton, and as the business of the firm kept apace with the movement, Mr. Bosworth's duties were enlarged. When the H. C. Frick Coke Co. was incorporated in 1882, he was appointed auditor of the company, and in 1887 he was elected by the directors secretary and assistant treasurer. Upon the retirement of Mr. Frick and the election of Mr. Lynch as president in 1897, Mr. Bosworth was elected vice-president, treasurer and a member of the board of directors, which offices he held at the time of his resignation

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The National Screw & Tack Co. of Cleveland, in view of the increase in its business, is building an addition, 300x90 feet, which will be four stories high, conforming to the present plant.

The Board of Water Commissioners, St. Paul, Minn., is receiving bids for furnishing 5,000 lineal feet of 6-inch pipe, with privilege of 5,000 feet additional; 2,000 feet of 8-inch pipe, with privilege of 500 feet additional; 4,500 feet of 12-inch pipe, with privilege of 500 feet additional, and a large quantity of 16-inch pipe.

APPRENTICES AT THE BALDWIN WORKS.

The widespread interest shown by foundrymen and machinery manufacturers in the apprenticeship question makes timely the following from the *Railroad Gazette* on the system in force in the Baldwin Locomotive Works at Philadelphia:

The Baldwin Locomotive Works has started in a serious way and on a large scale a system of apprenticeship designed to provide systematically for the future. On the face of it, and as a general proposition, this is one of the best things that a great manufacturing company could do for its own continued prosperity and for the nation. The development of manufacturing in this country has been greatly handicapped by the lack of systematic training of boys and young men for the vocations which they were to follow. Many things are responsible for this, among others the immense opportunities which have opened before the young men of the nation, making them impatient of careful training; the development among our people of the notion that an American can do anything and that he does not need to be specially educated; and, of recent years, the systematic opposition of the trades unions to any form of apprenticeship. In spite of these difficulties our astonishing wealth in natural resources and the energy, ingenuity, ambition, and self-reliance of our people have carried us far towards the front as a manufacturing nation. The process has been wasteful, but heretofore we have been so rich in undeveloped resources that we could be profuse without suffering. We remember hearing in 1893 a wise remark by Professor Reuleaux. Speaking after dinner one evening this sagacious gentleman reminded his hearers that the time was imminent, if it had not already come, when the Americans must learn the great lessons of economy; and the few years which immediately followed 1893 did a great deal to enforce these lessons.

The growth among us of systems of careful training of young men for the mechanical trades is an important fact bearing upon our national development. Consequently, one must look with pleasure upon the large enterprise of this sort on which the Baldwin Locomotive Works has entered. This company has established a special department designed to prepare the young men in its employ for their future work, and Mr. N. W. Sample, formerly general superintendent of the Denver and Rio Grande railroad, has been selected as chief of this department and has the matter now well organized. The forms of indenture for apprenticeship are now before us. Of these there are three, designated as first class, second class and third class, the first and second class being apprenticeship indentures, the third class being an employes' agreement. Apprentices of the first and second classes must have reached the age of 17 and bind themselves to remain until 21. The age limits are not absolute, but boys of 16 may be taken in and begin their apprenticeship at 17. Likewise, the term of four years may be shortened in cases of special aptitude and ability. Furthermore, boys of the second class will ordinarily serve but three years, as is said below. Both parties to the indenture sign an agreement designed to secure discipline, good conduct, fidelity, and fair treatment on both sides. The company retains the privilege of dismissing the apprentice at any time for improper conduct, neglect of duty, disobedience, or physical disability, and it is agreed that dismissal for any of the causes enumerated shall be final and conclusive evidence of the truth thereof, which clause is obviously important in avoiding the difficulty of proof. The apprentice receives wages on an agreed scale during his service and at the end of the full term he receives a certain agreed bonus. If the apprenticeship is ended before the full period for any reason other than dismissal for cause the apprentice gets a pro rata part of the bonus. If he is discharged for cause he gets no such bonus.

Apprentices of the first class agree to attend free night schools at least two evenings in the week for the first three years, where they will be taught elementary algebra and geometry for one year and mechanical drawing for two years. These apprentices must already have had a grammar school education, or its equivalent. They are paid 5, 7, 9, and 11 cents an hour for each of the four years and a bonus of $125 at the end.

The apprentices of the second class agree to attend the night schools two evenings a week for the first two years, during which they will be taught mechanical drawing. These apprentices must have had an advanced grammar or high school education, and ordinarily will be required to serve but three years because of their education. They will be paid 7, 9, and 11 cents an hour and get $100 bonus.

Young men of the third class are designated as employes, not as apprentices. They are to be over 21 and make a contract for two years, but may be discharged for the causes suggested in speaking of the apprentices. They will generally be technical school graduates, with some shop experience. They will be paid 13 and 16 cents an hour in the first and second years.

In all of the classes the pay is by the hour; the standard day's work is 10 hours. The company agrees to keep the young men at work steadily, while the young men themselves agree to work for more than 10 hours a day if called upon to do so. There is a clause also providing that if the hours of work in general through the shops are reduced to less than 10 hours a day the hours of the apprentice may be correspondingly reduced.

Change in the Oliver Iron Mining Co.

The directors of the Oliver Iron Mining Co., the Lake Superior Iron Co. and the Regent Iron Co., components of the United States Steel Corporation, at a meeting last week, received and accepted the resignations of Henry W. Oliver, president, and D. G. Kerr, vice-president, of the three companies. T. F. Cole, general superintendent of the Oliver Iron Mining Co., was elected to succeed Mr. Oliver as president in all the companies, with the additional title of general manager. Nelson P. Hulst was elected vice-president and general mining engineer. Both officers will have headquarters in Duluth. These changes are incident to the general reorganization of the executive staffs of the various companies controlled by the United States Steel Corporation.

Mr. Oliver's retirement from the presidency of the Oliver Iron Mining Co. marks the close of eight years of prodigious growth. The company was formed in 1893, to operate the Mesabi Mountain mine on the Mesabi range. In 1894 the Carnegie Steel Co. acquired a one-half interest in the company. In 1896 the Mountain Iron mine was leased and the Carnegie company acquired a further interest in the company, making its holdings five-sixths; the remaining one-sixth being owned by the Oliver & Snyder Steel Co. In 1897 the Norrie mine, on the Gogebic range was purchased, and later in the same year the Tilden mine. In 1898 the Pioneer mine, on the Vermillion range, was secured. In 1899 the Lake Superior Iron Co., the owner of several large mines at Ishpenning, Mich., thousands of acres of undeveloped land and a fleet of steamships was purchased. In 1900 the Pittsburg Steamship Co. was formed by the stockholders of the Oliver Iron Mining Co., which built a fleet of modern steamers for the transportation of the ores of the Oliver company. Many other mines had been secured, including the Ohio, Lone Jack, Norman, Sheridan and Stevens, on the Mesabi range; the Zenith, Sibley and Savoy mines, on the Vermillion range; the Aurora mine, on the Gogebic range; the Queen group, on the Marquette range; the Iron river group, on the Menominee range, and other smaller properties on the various ranges. The last purchase of the company was of the Mansfield and Columbia mines on the Menominee range early in the present year.

The opportunities for the use of steel in manufactured articles are increasing daily. We are selling thousands of tons of sheet steel annually for the manufacture of pressed steel car wheels, iron bed posts, frog plates, axle skeins, manhole covers, boiler lugs and braces, roofing, fence posts, trolley poles, steel ranges, agricultural machinery, wheelbarrows, refrigerators, typewriters, lamps, ornamental ceilings, cattle guards, wind mills, and for thousands of other individual uses where either timber or cast iron has heretofore been employed. The quality of steel is constantly being improved and its cost reduced to such a point as to bring it into use in places where it has formerly been barred.—[Ryerson & Son in the Boiler-Maker.

INDUSTRIAL SUMMARY.

[If you are in need of machinery of any description, please notify *The Iron Trade Review*, and we will put you in communication with our advertisers at once.]

New Buyers in the Market and Some of Their Wants:—

Manager Green, of the Solvay Process Co., and other promoters of the company, which contemplates erecting a furnace at Delray, near Detroit, Mich., now propose to increase the capital stock from $750,000 to $1,500,000. It is proposed to use coke from Semet-Solvay retort ovens.

The Canadian Chrome Iron Co., Ltd., of Sherbrooke, Quebec, has been incorporated with a capital of $50,000. The incorporators are Hugh Leonard, Alphonse Labrecque, James Leonard, George E. Drummond and James E. McCall.

The Reliable Foundry Co. of Quincy, Ill., has been incorporated with a capital of $10,000. The incorporators are W. J. Reese, C. W. Sahland, Anton Wiebmer and Carl Becker. About one-third of the plant of the Gardner Governor Co. has been leased for a period of three years and a general foundry business in iron, steel and brass will be carried on. The new concern will also engage in pattern making.

The Pitt Iron Mining Co. of Wheeling, W. Va., has been incorporated with a capital of $40,000, to engage in the mining of iron ore and other minerals. C. E. Pope, E. W. Mudge, A. J. Clarke, E. C. Garlick and Frank Billings are the incorporators.

The articles of incorporation of the Rogers Locomotive Works, the new company that recently purchased the plant at Paterson, N. J., were filed at Paterson last week. The capital stock amounts to $125,000, half common and half preferred. It is reported that the new company already has orders for 30 locomotives for the Great Northern railroad.

The Central Foundry & Machine Co. of Reading, Pa., has been incorporated with a capital of $7,000. L. M. Francis, H. C. Urich, E. L. Francis, P. A. Bushong and J. H. Cheetham are the incorporators.

The Youngstown Mfg. Co. of Youngstown, O., was granted an Ohio charter this week with a capital of $300,000. The new concern will manufacture bolts, nuts, rivets, etc. The incorporators are Robert Bentley, C. H. Booth, Dr. W. L. Buechner, Edwin McEwen and A. E. Adams. A site for the new plant has not yet been secured, but it is probable that the plant will be erected in Youngstown, and if not in the city, in one of the outlying towns.

The capital stock of Webster, Camp & Lane Co. of Akron, O., has been increased from $100,000 to $300,000. The whole of the increased stock has already been subscribed for. A new plant is to be erected by the company at South Akron for the manufacture of heavy mining machinery. The present plant will also be retained and operated as at present.

The Marine Iron Works of Tacoma, Wash., has been organized with a capital stock of $10,000 to manufacture, repair and sell boilers. J. C., William and H. D. Ollard are the incorporators.

Gillett & Eaton is a new firm which succeeds to the Gillett Iron Works of Lake City, Minn. A general machine shop and foundry business will be done.

The Tampa Foundry & Machine Co., Tampa, Fla., is building a new machine shop 50x100 feet. A new foundry and office building will also be erected. S. L. Varnedoe is president of the company.

The Shelby Iron Co., 100 North Broadway, Shelby, O., has been incorporated with a capital of $15,000 to manufacture and deal in iron, copper, tin, etc. If present plans are carried out, a rolling mill may be erected at some future time. The officers are: H. K. Beck, president; L. A. Howe, vice-president; F. L. Smith, secretary and treasurer.

The Eclipse Mfg. Co. which was recently organized at Pittsburg, has placed contracts for the plant. The main building will be 75x130 feet, and will contain the rivet machines, forging machines, rolls, bolt cutters, etc., all of the latter being furnished by the Ajax Mfg. Co., Cleveland. A 100-h. p. gas engine will furnish all the power required. The plant was designed by Samuel Diescher & Sons of Pittsburg.

The Tuscora Steel Co. has just organized at Newcomerstown, O., to build a plant at that city. The capital stock is $200,000, and the following directors have been elected: J. R. Jackson, New York; Thomas Hackett and W. B. Neal of Pittsburg; and L. C. Taylor, Cambridge, O.

Fires and Accidents:—

The plant of the Fifield Tool Co., located at Lowell, Mass., was destroyed by fire last week with a loss of aobut $100,000.

Shantz & Son's foundry, at Berlin, province of Ontario, Can., was damaged by fire last week; loss $4,000.

The pattern room of the Wing-Sayle Foundry Co. of Little Rock, Ark., was damaged $1,000 by fire on May 1.

The Eleanor iron works at Tyrone Forges, Pa., was badly damaged by fire last week. Loss about $2,000.

One of the oldest manufacturing establishments in New England, the Silver & Gay Co.'s shop at North Chelmsford, Mass., built in 1832, was almost totally destroyed by fire recently, with a loss of 50,000. The company will rebuild as soon as possible, the preliminary work having already commenced.

New Construction:—

The Iron & Steel Roofing Co. of Youngstown, O., has commenced work on another addition, 300x200 feet, on land owned by the company at Hazelton, O.

The Leechburg, Pa., plant of the American Sheet Steel Co., is being enlarged for the purpose of installing two additional hot and one cold mill.

Plans are being prepared for a large addition to the Foundry & Machine plant of Wahle Bros. at Davenport, Ia.

L. Schreiber & Sons Co. of Cincinnati have acquired a site of about 20 acres on the outskirts of Cincinnati upon which in the near future they will erect a new plant. The present plant will be dismantled and abandoned.

A new foundry is being built by the North Wisconsin Boiler Works of Ashland, Wis. The building will be 100x40 feet.

Robert Wetherill & Co., engine builders, of Chester, Pa., will erect a new machine shop. It will be 100x240 feet and two stories. The construction will be entirely of brick and steel.

The directors of the New Haven Iron & Steel Co. of New Haven, Conn., have decided to increase the capacity of the plant to double its present output. A large amount of new machinery is to be installed and an addition made to the present building.

O. P. Chatfield is erecting a brass foundry at Marinette, Wis., remodeling the buildings on a site recently leased.

The Pittsburg District:—

The Colonial Steel Co. of Pittsburg has applied for a Pennsylvania charter with a capital of $1,000,000. A crucible steel plant will be erected by this company at Monaca, Pa., on the Ohio river, about 12 miles below Pittsburg. A site of 50 acres has been secured and work on the new plant will be commenced during the summer. James W. Brown, recently vice-president of the Crucible Steel Co. of America, and before that senior member of the firm of Howe, Brown & Co., is the prime mover in the new company.

The Standard Chain Co., last week posted notices at its plants at Rankin and Braddock that all employes would be granted a Saturday half holiday until September.

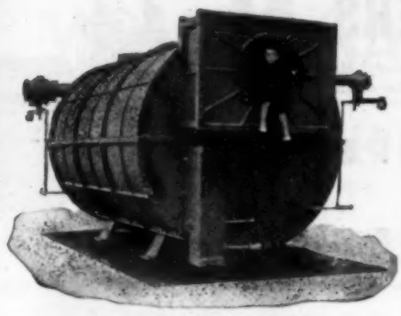
A readjustment of wages took place last week at open-hearth mill No. 2 of the Homestead Steel Works of the Carnegie Steel Co. The change was occasioned by the addition of four new furnaces to the department. A reduction of 9 cents a ton was made all around but on account of the increase in the number of furnaces it is claimed that the men can make better wages than ever before. There were formerly 18 furnaces in this department.

The McConway & Torley Co. is having a steel foundry erected adjoining its malleable plant in Pittsburg. The building will be 85x300 feet.

The rod mill of the American Steel & Wire Co. at Rankin, Pa., resumed operations this week. Work was stopped about three weeks ago on account of a broken engine shaft.

Neil Bros. of Pittsburg are repairing the Chess rolling mill on the South Side for the manufacture of tin plate. A bar mill and two sheet mills are also being installed. The mill has not been operated for several years.

The McClintic-Marshall Construction Co. has closed con-



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Special Design.

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Other valuable considerations are gained when you put in the *COCHRANE HEATER,* for these appliances will accomplish the seemingly wonderful yet simple results to which we are referring. There is a saving of water—say one-seventh of the total supply required—a saving of steam—an increase in the efficiency of the steam generating capacity of the boilers—less labor cleaning boilers—fewer repairs and shutdowns, etc.

HARRISON SAFETY BOILER WORKS,
Clearfield & 17th Sts., - - - - Philadelphia, Pa.

tracts within the past week for nearly 3,000 tons of structural material. It has the contract for the erection of the steel building for the new plant of the Wellman-Seaver Engineering Co. at Cleveland, O. It will require about 1,200 tons of steel. The contract for the erection of the new steel foundry for McConway-Torley Co. of this city has also been awarded this company.

General Industrial Notes:—

The strike at the Tyler Tube Works at Washington, Pa., has been declared off, all the employes returned to work. The men demanded an increase in wages in addition to recognition of their union. Their wages were increased but the company refused to deal with the union.

On May 27, the Wheatland, Pa., mill of the Continental Iron Co. will be placed in full operation. It will be operated for the benefit of the creditors of the company and it is believed the profits of the next six months will be sufficient to pay off all obligations.

The Heine Safety Boiler Co. of St. Louis, Mo., has been awarded the contract for four 270-h. p. boilers by the Mahoning Rubber Co. of Youngstown, O.

Four of the five hot mills of the Cumberland plant of the American Tin Plate Co. at Cumberland, Md., were placed in operation this week. Mill No. 2 of the N. & G. Taylor Co., which is also located at Cumberland, will be placed in operation shortly.

The roll turners employed in plants in the Youngstown, O., district have already demanded an increase in their pay of 5 cents an hour. The union was only organized a short time ago, and similar organizations are being formed throughout the country.

As a result of a strike among pourers in the foundry of the Simmons Mfg. Co. at Kenosha, Wis., the entire plant has been shut down. The trouble arose over a recent change in the wage scale.

J. M. Rodgers and son, J. E. M. Rodgers, of Sussex, Eng., and C. M. Stuart, of Chicago, have decided to locate their edge tool works at Jonesboro, Ind., as no favorable site could be secured at Marion, Ind., where it was at first proposed to locate their plant.

The Vulcan Iron Works Co. of Toledo, O., recently shipped a 26-ton steam shovel to Kimberly, South Africa, for the DeBeers Consolidated Mining Co.

The annual meeting of the stockholders of the Buffalo Iron Co., was held last week at Mannie, Wayne County, Tenn. The profits for the year ending Dec. 31, 1900, amounted to $95,000 and there was a net profit remaining of $61,000, permitting a dividend on both the common and preferred stock of 6 per cent. Directors were elected as follows: J. P. Williams, A. M. Shook, Robert Ewing, H. F. Kirkpatrick, T. M. Steger, John Burns, Edgar Jones and W. K. Phillips. J. P. Williams was elected president, Robert Ewing, general manager and C. Cooper, secretary and treasurer. The company will commence the construction of a railroad and a new plant for washing low phosphorus ore.

At the plant of the American Steel Casting Co. at Chester, Pa., a pinion weighing 85,000 pounds was cast last week. It is 9 feet, 6 inches in diameter.

The Chattanooga Furnace, at Chattanooga, Tenn., will be blown in within a few days.

The Michigan Iron Works of Cadillac, Mich., recently changed hands. The new proprietors are Frank Farrar, Frank Kyser, C. Kyser and Daniel Kyser.

A satisfactory settlement of the strike at the plant of the Buffalo Bolt Co. at North Tonawanda, N. Y., has been effected.

Thomas Carlin's Sons Co. of Allegheny, Pa., is building for the Howard Axle Works of the Carnegie Steel Co. hammers and billet conveyors. The latter will be used to take hot billets from the heating furnace to the hammers. The Thomas Carlin's Sons Co. has a large amount of general work in its shops, including 15 to 20 shears, grinding pans and derricks. They are running their plant to its full capacity, and have orders ahead for several months.

The Youngstown Foundry & Machine Co. of Youngstown, O., has placed its plant on double time in all departments.

The Robert Field Company,

20 Hayden Building, COLUMBUS, OHIO.

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"SLOSS," "FLORENCE," "LADY ENSLEY" AND "SHEFFIELD" brands of Alabama Foundry and Forge Pig Iron.

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"CLIMAX" Kanawha Foundry Coke. Smithing Coal.

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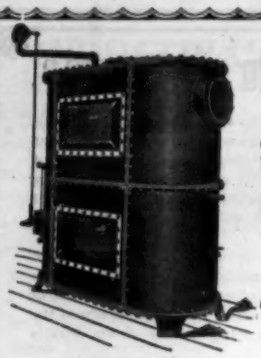

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FEED WATER HEATERS

Cut herewith illustrates Stilwell's latest design. Made entirely of cast iron. Saves fuel and filters the feed water for steam boilers. Use only exhaust steam.

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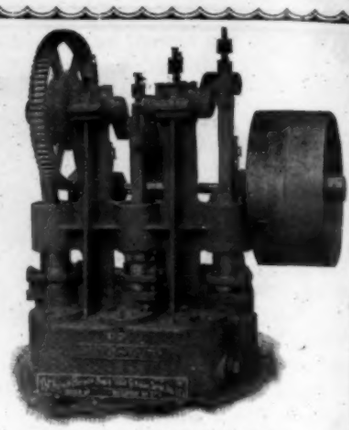


Triplex Boiler Feed Pump.

The company manufactures rolls and rolling mill machinery of all kinds.

The Niles Boiler Co. of Niles, O., has installed a 10-ton crane with a 47½-foot span, made by the Case Mfg. Co. of Columbus, Ohio.

The Vulcan Foundry & Machine Co. of New Castle, Pa., manufacturers of mill castings and specialties in mill machinery, states that it is not one of the constituent companies of the American Ingot Mold Co. The New Castle concern has decided to remain an independent seller of open-hearth and Bessemer ingot molds.

A battery of six new return tubular boilers, aggregating 1,800-h. p. capacity, is now being installed in the plant of the Tidewater Steel Co. of Chester, Pa. These will be used as a general steam supply station, replacing others now in use.

The engine foundation for the new six-mill sheet plant which is now being erected by the Laughlin Nail Co., Martin's Ferry, O., is about completed, and work has been started on the mill foundations. A corrugating plant is to be built in connection with this sheet mill. It is not likely that operations will begin before October or November.

The William Tod Co. of Youngstown, O., recently made a bed plate weighing 120,000 pounds for a 47x72-inch reversing engine for the Cleveland Rolling Mill plant of the American Steel & Wire Co.

The Aultman-Taylor Co. of Mansfield, O., has awarded a contract for an addition to its boiler plant. The building will be 100x130 feet, and will be used as an erecting and testing room.

The Kirk-Latty Mfg. Co. of Cleveland, O., is preparing to make a large shipment of assorted sizes of bolts to Australia. It is also having plans prepared for extensive improvements in its plants in which 210 men are now employed.

The Board of Trade of Parkersburg, W. Va., has before it a proposition to erect a tube mill in that city providing a site and bonus will be given. It is said that arrangements are now being made for securing the industry.

The No. 1 open-hearth plant of the Pennsylvania Steel Co. at Steelton, Pa., which has been rebuilt, has been placed in operation. The 25-ton furnaces have been enlarged to 50-ton capacities and changed to the basic process.

The S. Obermayer Co., Cincinnati, announces that it has just installed machinery for the manufacture of snap flasks.

The office and business of the Wright Mfg. Co., manufacturers of high-grade steam specialties, Cleveland, have been removed to Detroit, Mich., where the business of the company will hereafter be transacted.

At a meeting of the creditors of the Continental Iron Co., in Warren, O., last week, trustee James Campbell presented his resignation, which was accepted. R. S. Henderson, of Sharon, Pa., who succeeds to the trusteeship, gave bond of $25,000. A new advisory committee, composed of J. M. Bailey, A. M. Byers, Jr., Dewitt Wilson, Pittsburg, Pa.; H. B. Shields, Youngstown, and W. D. McKeefrey, Leetonia, was named. An application to operate and make needed repairs on the Wheatland mill was granted by the court, the amount and extent of the improvements to be left to the judgment of the advisory committee.

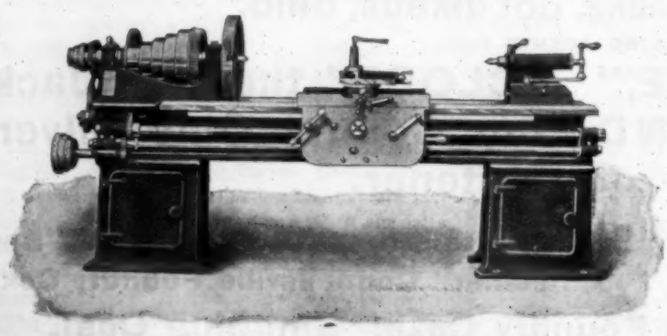
The West and Northwest:—

The American Steel Foundry Co. of St. Louis, has purchased the Sligo Furnace in Dent County, Mo., and will manufacture its own charcoal pig iron.

The Automatic Smoke Preventer Co. of New York, has opened an office at 144 Hartford Building, Chicago. The company has an exhibit in the building formerly occupied by The Inter-Ocean, of Chicago.

The Under-Feed Stoker Co. of America whose general office has recently been removed to Marquette Bldg., No. 204 Dear-

SCHUMACHER & BOYE,



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Steel Castings from 100 to 75,000 lbs
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MONTREAL, Homer Taylor, 183 St. James St.
SAN FRANCISCO, John Woodlock, 154-156 First St.

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born St., Chicago, report sales of the Jones under-feed mechanical stoker as follows, many being second, and some third orders: Hammond Building, Detroit, Mich.; Hiram Walker, Ltd., Walkerville, Ont.; Christian Moerlein Brewing Co., Cincinnati, O.; Bavarian Brewing Co., Covington, Ky.; Danville Ice & Cold Storage Co., Danville, Ky.; Hecker Jones Jewell Milling Co., N. Y. City; Jno. Ellis & Co., Edgewater, N. J.; Maas & Waldstein, Newark, N. J.; Montreal Mining Co., Hurley, Wis.; Brand & Hardin, Saginaw, Mich.; J. G. Schemm Brewing Co., Saginaw, Mich.; People's Ice & Cold Storage Co., McKeesport, Pa.; Lynn Gas & Electric Co., Lynn, Mass.; Toledo Heating & Lighting Co., Toledo, O.; Posten Paving Brick Co., Crawfordsville, Ind.; Alsen's Portland Cement Co., W. Camp, N. Y.; Cedar Hollow Lime Co., Cedar Hollow, Pa.; Remington-Martin Co., Watertown, N. Y.; Lozier Motor Co., Plattsburg, N. Y.; Hudson County Consumer Brewing Co., W. Hoboken, N. J.; Wellston Portland Cement Co., Wellston, O.; Columbus Ice Co., Columbus, O.; Traders' Paper Co., Lockport, N. Y.; Newport Mining Co., Ironwood, Mich.; Butte Reduction Co., Butte, Mont.; Lyon, Clement & Greenleaf, Wauseon, O.

The Bullock-Wagner Sales Organization has established a district office at No. 1624 Marquette Building, Chicago. It will be in charge of H. B. Foster, who has for about two years served the Wagner company as sales agent. He will have the assistance of E. W. Goldschmidt, formerly of the Western Electric Co.

J. H. Long, Chicago representative of Shickle, Harrison & Howard Iron Co. of St. Louis, has removed his office from 517 to 521 The Rookery.

The Reliable Foundry Co. has been organized at Quincy, Ill., by C. W. Sahland, A. Weibmer and C. Becker of the Weibmer-Becker Machine Co. Wm. J. Reese will be the superintendent. The company has leased the foundry formerly operated by the Gardner-Governor Co. and is refitting this with modern appliances. All kinds of heavy and light gray iron machine castings and architectural work will be made, as well as brass, bronze, copper, aluminum, white metal and composition castings.

The Cambria Steel Co., through its Chicago office, has received a contract from the New York Central & Hudson River R. R., for the structural steel to be used in the steel grain elevator which that company will build. Between 5,000 and 6,000 tons will be required. George M. Moulton & Co., general contractors, Chicago, have the general contract.

The C. F. Sparks Machine Co., Alton, Ill., has been incor-

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All kinds of soft, fine, medium and heavy Gray Iron Castings to order. Boiler, Heater and Architectural Iron Castings a specialty.
Send for Prices and Estimates.
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We have in stock, new, ready for shipment:—
One Self-contained Geared Hoist, for steam or air power, very compact, suitable for dock, vessel or mine.
Will hoist 1100 lbs. 490 ft. per minute.
Drum fitted with clutch and will hold 3000 ft. of ½-in. rope.
One Hoist, same as above in all respects, ready for shipment in one week.
One Self-contained Geared Hoist, for steam or air power, very compact, suitable for dock or vessel.
Will hoist 1700 lbs. 540 ft. per minute.
Drum fitted with clutch and will hold 1500 ft. of ⅝-in. rope.
Write for details and special prices.
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A comprehensive treatise on the art of molding, including chapters on core making, loam, dry sand and green sand molding, also crystallization, shrinkage and contraction of cast iron and a full explanation to the science of pressures in molds, added to which are formulas for mixtures of iron, tables, rules and miscellaneous information. By SIMPSON BOLLAND. Illustrated with over 300 engravings. 12mo.; cloth $2.50
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Regenerative Gas Furnaces and Water Seal Gas Producers.
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FINISH UNEXCELLED. QUALITY HIGHEST STANDARD.
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KENTUCKY FIRE BRICK WORKS.
CUPOLA BRICK.
KENTUCKY FIRE BRICK WORKS, PORTSMOUTH, O. HIGH GRADE FIRE BRICK BEST BLAST FURNACE & ROLLING MILL BRICK
STEEL WORKS BRICK.
FIREBRICK, KY.

porated with a capital stock of $5,000. The incorporators are C. F. Sparks, W. K. Stanard and Samuel Plant.

The Alice Mining Co., Joplin, Mo., contemplates the erection of an oxide plant at West Plains. The equipment will include one 60-h. p. boiler, one 40-h. p. engine, one 15-inch Blake crusher, one positive blower, one set of 18-inch rolls, etc.

It is reported that the Dillon-Griswold Wire Co., Sterling, Ill., will expend about $50,000 in enlarging its plant.

The Armstrong Bros. Tool Co., Chicago, has removed its offices and factory from 98 W. Washington St. to 617-619 Austin Ave.

The American Gasoline Motor Co. of Chicago, has been incorporated with a capital stock of $2,500, by Joseph Schmidt, Jr., John H. Berkstresser and John W. Hill.

Plans are being prepared for extensive additions to the plant of the Maywood Foundry & Machine Co., Maywood, Ill., which will increase the capacity 50 per cent. The foundry will be extended 85 feet in length, with additional cupolas, the core rooms greatly enlarged and new equipment added to the electric power plant.

The American Engineering Works of Chicago have received recently a number of export orders for mining and industrial cars, to be equipped with their patent Anaconda wheels and axles. These orders have been from England, Japan, Mexico, British Columbia and Alaska. This company is also filling a number of export orders for shells for crushing rolls made from its special A. E. W. steel.

The United States Steel Casting Co. of Chicago last week took title to a factory site on Chicago Heights for $75,000. It cannot be definitely learned at the present time whether a steel plant is to go up on the new site or not.

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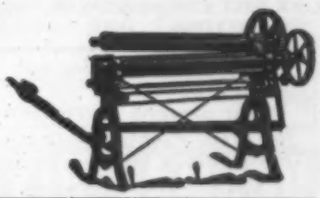

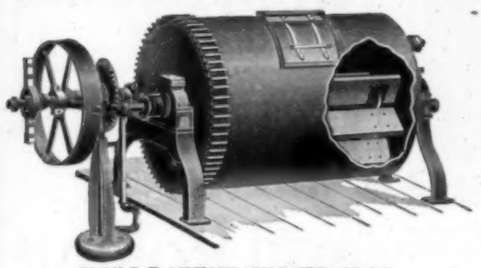

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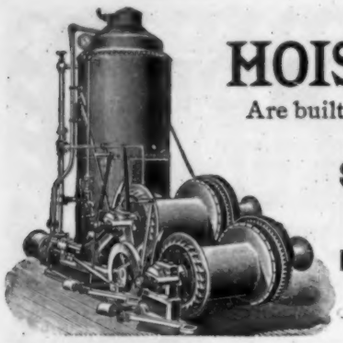

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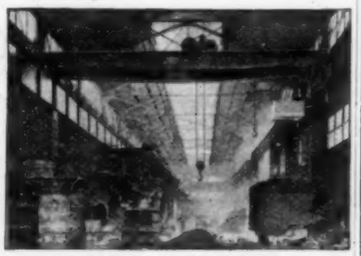
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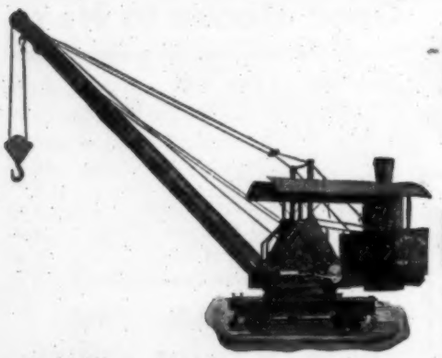

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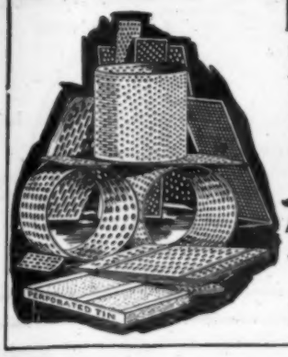

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15	13	11	Lorain Branch	10	14	16
P.M.	P.M.	A.M.		P.M.	A.M.	P.M.
4:00	1:05	7:00	Lorain	3:32	12:02	7:15
4:18	1:25	7:20	Elyria.....	3:14	11:45	6:59
4:36	1:53	7:43	Grafton	2:56	11:29	6:41
4:58	2:15	8:05	Lester Jun...	2:32	11:08	6:21

5	3	1	Main Line.	2	4	6
P.M.	P.M.	A.M.		A.M.	A.M	P.M.
5:10	1:35	7:50	Cleveland....	9:50	12:00	6:00
6:29	2:51	8:27	Lester Jun...	8:48	11:07	5:00
6:31	2:40	8:36	Medina	8:36	10:59	4:48
6:54	2:59	8:57	Seville	8:14	10:40	4:26
7:00	3:04	9:03	Sterling	8:03	10:34	4:20
7:22	3:24	9:24	Warwick.....	7:41	10:13	3:56
7:30	3:32	9:31	Canal Fult'n	7:34	10:06	3:48
7:50	3:50	9:50	Ar. Dep. Massillon.	7:15 8 P.M.	9:50	3:30
7:50	3:50	9:50	Dep. Ar.	7:50	9:50	3:30
8:05	4:06	10:05	Justus.....	7:34	9:35	3:13
8:35	4:37	10:36	Canal Dover	7:03	9:05	2:44
8:42	4:44	10:43	New Phila....	6:55	8:58	2:37
9:00	5:01	11:00	Ar. Dep. Urichsville	6:38	8:40	2:20
7 A.M.						
7:30	5:10	11:10	Dep. Ar.	6:38	8:40	2:20
8:06	5:43	11:42	Freeport	6:00	8:06	1:44
		P.M.				
8:32	6:07	12:05	Flushing	5:34	7:42	1:20
9:40	7:05	1:05	Bridgeport....	4:30	6:45	12:20

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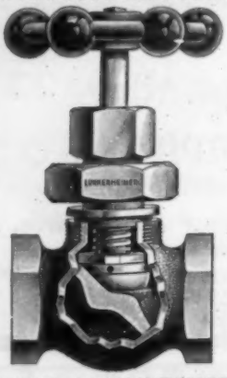

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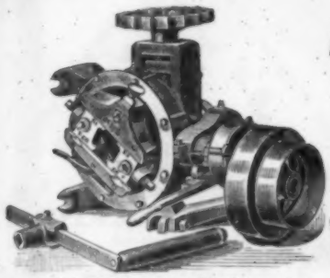

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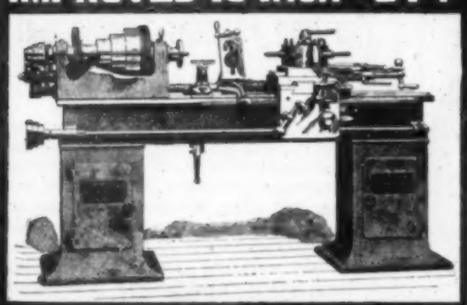

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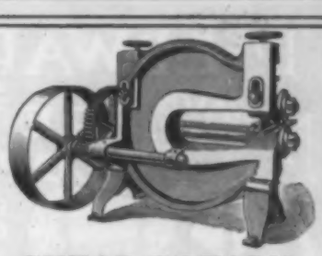

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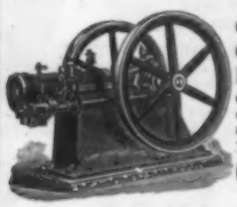

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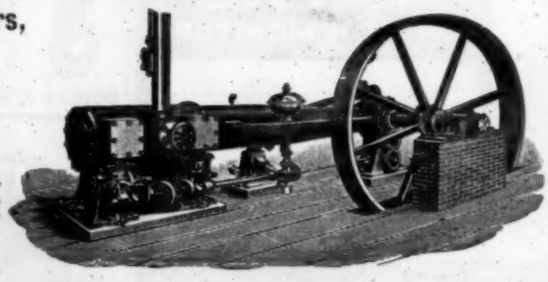

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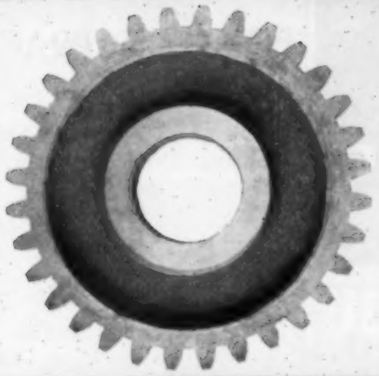

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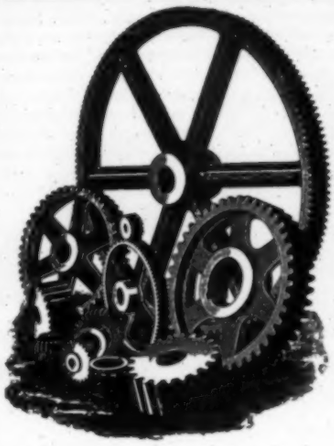

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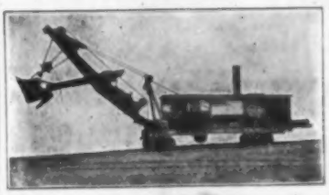

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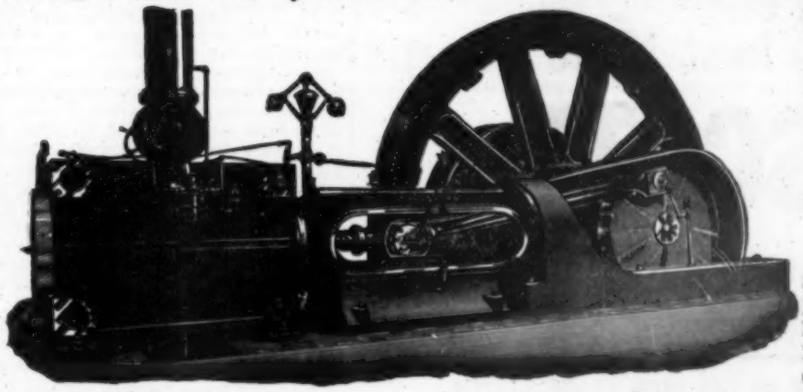

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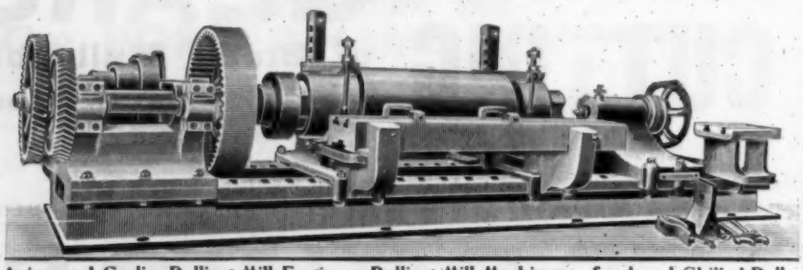

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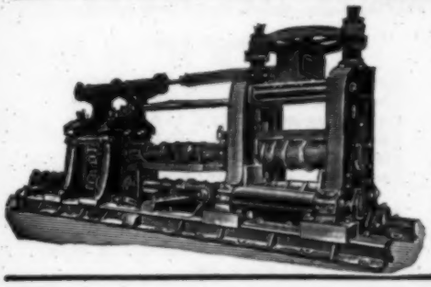

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Dickson Mfg. Co., of Scranton, Pa. (exclusive of Locomotive Works).

All property acquired is to be conveyed IN FEE AND FREE FROM MORTGAGE OR OTHER LIEN.

No mortgage can be placed upon the property without the assent of seventy-five per cent of the amount of Preferred Stock outstanding.

The expert engineer, Mr. Julian Kennedy, reports after several personal examinations of the properties, that he estimates "the value of the plants, taking into account the real estate, buildings, machinery, tools, patterns, drawings, and patents, together with the cost of organizing and getting into full operation, BUT NOT ESTIMATING ANYTHING FOR GOOD WILL, AT $9,935,000."

He further reports, under date of April 5th, 1901, as follows:

"I find the plants all running at their fullest capacity. The great bulk of the tools in all of these are comparatively new, having been put in within the last seven or eight years, and all the works are in good condition and running smoothly."

The security of the Preferred Stock, WITHOUT ANY CONSIDERATION FOR THE ADVANTAGES ACCRUING FROM THE CONSOLIDATION, FOR THE VALUABLE GOOD WILL OF THE SEVERAL COMPANIES, so long and favorably known all over the world, or for the earning capacity of the united companies, will be substantially as follows:

Cash Capital	**$10,000,000**
of which sum $2,500,000 will be expended in the erection of an additional plant to double the present capacity of the Allis Works.	
Valuation as above of existing plants owned in fee and free of lien	**9,935,000**
Total present value of tangible property	**$19,935,000**
The total issue of Preferred Stock against this property is	**16,250,000**

all of which is issued for cash at par, or, in lieu of cash, for the plants at less than their valuation as above stated, and of which total issue there will be more than 61 per cent in cash, and the balance will be in property that produces much more than the cumulative dividend to which the Preferred Stock is entitled.

Of the total Preferred Stock, $7,850,000 has been accepted by the original Companies in lieu of cash, in part payment for their properties to be conveyed to this company. The remaining $8,400,000 is now offered for sale to provide for the discharge of existing mortgages and for part of the above-mentioned Cash Capital, the remainder thereof being provided by the sale of Common Stock already consummated.

The accounts of the several concerns have been examined by Messrs. Jones, Cæsar & Co., chartered accountants, who certify "that the combined profits of these companies, in each of the last two fiscal years, after making full provisions for depreciation and bad debts, but without charging interest and management salaries, exceeded the amount required to pay seven per cent dividends upon $16,250,000 Preferred Stock, whilst for the last fiscal year the profits, as above defined, considerably exceeded such amount." It was not until the last year that the new works of Fraser & Chalmers came into full operation.

The net profits for the fiscal year ending May 1, 1902, are estimated by the chief officials of the respective companies, without any allowance for increase of manufacturing capacity, or for the economies of consolidation, or increase of prices, at sufficient to pay dividends at the rate of seven per cent on the $16,250,000 Preferred Stock and about four per cent on $20,000,000 of Common Stock. Including the economies from consolidation confidently anticipated by these authorities, the net profits for the same period should exceed the amount required to pay seven per cent dividends on both classes of stock.

The same officials similarly estimate that upon the completion of the additional Allis Works, now in process of construction, the profits will be equivalent to eight per cent on $16,250,000 of Preferred Stock and ten per cent on $20,000,000 of Common Stock, with a material addition to the Surplus Account.

The Allis, Fraser & Chalmers and Gates Iron Works plants have been operated night and day during the past few years, and have, from lack of capacity, declined in that period as much business as they have been able to accept.

The business of these concerns, with more than fifty per cent increase of capacity and ample cash capital will be conducted by the Messrs. Allis and Reynolds, of E. P. Allis Company; W. J. Chalmers, of Fraser & Chalmers, and Gates & Hoyt, of Gates Iron Works, who have successfully managed their respective works for many years.

The Board of Directors has been constituted as follows:

EDWARD D. ADAMS, New York.	CHARLES ALLIS, Milwaukee.
MARK T. COX, Orange, N. J.	WILLIAM W. ALLIS, Milwaukee.
WM. L. ELKINS, Jr., Philadelphia.	FRANK G. BIGELOW, Milwaukee.
ELBERT H. GARY, New York.	W. J. CHALMERS, Chicago.
HENRY W. HOYT, Chicago.	JAMES H. ECKELS, Chicago.
WILLIAM A. READ, New York.	MAX PAM, Chicago.
JAMES STILLMAN, New York.	EDWIN REYNOLDS, Milwaukee.
CORNELIUS VANDERBILT, New York.	

The regularity of the incorporation of the Allis-Chalmers Company and the validity of the issue of its securities are certified to by Messrs. Strong & Cadwalader, of New York, and Messrs. Pam, Calhoun & Glennon, of Chicago.

The accounts of the company will be regularly audited by Chartered Accountants.

Subscriptions for the above described Preferred Stock will be received at the offices of the undersigned until the close of business on Tuesday, the 21st day of May, subject to the right reserved to reject any or all subscriptions, and to close the subscription at any time without notice. Temporary receipts will be issued pending the preparation of engraved certificates.

The entire amount of this issue has been underwritten.

AFTER PERSONAL INVESTIGATION WITH THE ASSISTANCE OF EXPERTS IN THEIR RESPECTIVE LINES, OF THE PROPERTIES, BUSINESS AND EXECUTIVE ADMINISTRATION TO BE REPRESENTED BY THE ALLIS-CHALMERS COMPANY, WE RECOMMEND ITS PREFERRED STOCK AS A MANUFACTURING INVESTMENT, IN THE SECURITY, EARNINGS AND MANAGEMENT OF WHICH WE HAVE ENTIRE CONFIDENCE.

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The Iron and Steel Press Co

CLEVELAND, OHIO.

DIRECTORY

To the Iron and Steel Works of the United States for 1898.

PUBLISHED BY
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The American Iron and Steel Association has just completed a thorough revision of its Directory to the Iron and Steel Works of the United States, bringing down to April, 1898, a description of these works. It also contains a complete Directory to many leading industries which are large consumers of iron and steel. This edition, which is the fourteenth that has been issued, embraces more complete details of all the iron and steel works of the United States, and of industries which are large consumers of iron and steel, than any preceding edition. It retains all the old features of preceding editions and contains many new features.

In the edition for 1896 there was given for the first time a complete list of Malleable Iron Works in the United States, and to this new feature there are now added complete lists of the Rail Mills, Structural Mills, Steel Casting Works, Bolt, Nut and Rivet Works, Chain Works, Seamless Tube Works, and Riveted Pipe Works—all new features

The lists of Plate and Sheet Mills and of Tin Plate and Stamping Works are much more complete than in previous editions. The names and location of all the works described are given in alphabetical order, followed by a description of their character, capacity and products, with the names of the principal officers, etc., including the names of selling agents. This edition makes a cloth-bound book of nearly 400 well-printed pages—many more than in any previous edition It contains a complete list of all the

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Cut-Nail Works,
Tin Plate Works,
Stamping Works,
Forges and Bloomaries,
Wire Rod and Wire Mills,
Wire Nail Works,
Iron and Steel Bridge Builders,
Iron and Steel Ship Builders,
Horse-Nail Works,
Locomotive Works,
Malleable Iron Works,
Cast Iron Pipe Works,
Cast Iron Soil and Plumbers' Pipe Works,
Wrought Iron, Wrought Steel and Riveted Pipe Works,
Seamless Tube Works,
Chain Works,
Bolt, Nut and Rivet Works,
Car Axle Works,
Car Wheel Works, and
Car Builders in the United States

ALSO A LIST OF THE

Iron and Steel Works in Canada and Mexico.

This edition of the Directory is an invaluable book of reference for all business men who wish to correspond with iron and steel manufacturers or with iron and steel consumers, forming, in every respect, a COMPLETE GUIDE to the iron and steel works of this country and to the principal works which consume iron and steel.

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